# Uncontrolled Hazardous Wasta Site Ranking System

A Users Manual (HW-10)

Originally Published in the July 16, 1982, Federal Register

United States
Environmental Protection
Agency

90066973

the HRS room. Please see one of the HRS coordinators fo	
SITE NAME Houston Light and Power Pobinson	Station
TDD # 1-06-8902-26	
PAN FTX0809PAA	
CERCLID TXD 000 83740/	

.

,

# PEER REVIEW TRACKING FORM

Project No: FT1306  TDD#: F6890226  Report Title: FP1	PAN#: FTYU8	109PAA AI	uthor:	binson Sta occhi + Mover
First Review			Second Review	
Reviewer Date	Section	Reviewer	Date	Section
9S 5-15-	89		4/1/89	
SL 5-15-	89 all			
gpt 5/17/8	9		<del></del>	
		<b> </b>		<del></del>
Approved for Release:	Author			Date
	Author			Dave
	AFITOM			Date
	FITOM	m	17 M	Date

# CME

# REF 2 FIR III A

TWC Reg. No. 31638

# TEXAS WATER COMMISSION Comprehensive GW Monitoring Evaluation (CME) Report

# INSPECTION COVER SHEET

EPA ID No. TX DOOD83'1401	101/1	C.O.Use Only  Date Entry Date
NAME OF COMPANY HL+P, P. H.		<i>)</i>
COUNTY (Inlueston TYPE OF	INDUSTRY Electric	McGuire Tel 712-922-220
Current GW Monitoring Status:  (Specify for each Waste Management Area "WMA")	Detection until	tinal closure.
Inspection Information:	•	
Inspector(s) Mary L. Ambres	ie and Marilyn	Long Date(s) 3-16-87
Participants Richard Bye of	and Doug Chin	of HTAB
Type of Inspection (check) EV	OME SA	<u>×</u>
Evaluation: S	ប	
A. Monitoring System	******	Signed: Mary L. Anchrose Inspector Date: 11-12-87
B. Sampling Procedures		
C. Analysis & Results	ersries	Signed: Paul J. Lewis
D. Records & Response		Reviewer
S= Satisfactory U= Unsatis	sfactory	· .
Overall Evaluation: Compl	iant NonComplia	ant

# **Texas Water Commission**

#### INTEROFFICE MEMORANDUM

TO

The Files

DATE: 11/12/87

THRU

Reports and Management Group

Hazardous and Solid Waste Division

FROM

Groundwater Enforcement Unit

Hazardous and Solid Waste Division

SUBJECT:

HISP P. H. Robinson Generating Station

Solid Waste Registration No. 31638

Attached is an addendum report to the Comprehensive Monitoring Evaluation (CME) of March 16, 1987, which includes the results of analyses of monitor well samples taken during the inspection. These results were not available at the time of the CME report submittal. The attachments to this memo should be affixed to the original CME report.

Sampling results from MW-3 confirm the company contention that non-hazardous contamination if present can not be detected due to the naturally occurring high levels of the same constituents in the ground-water.

Mary Ambrose

Attachments

cc: Southeast Region Deer Park Office

mash. P.H. Robinson Generating Station

TWC Reg. No. 31638

# TECHNICAL REPORT Comprehensive Ground-water Monitoring Evaluation (CME)

#### Analysis and Results

- 1. Tabulation of Analytical Methods Indicate which analyses are performed by:
  - a. Off-site contract laboratory
    T.O.C.
    T.O.X.
    pH
    Conductivity
    Chloride
    Iron
    Manganese
    Phenols
    Sodium
    Sulfates
  - o. On-site operator laboratory pHConductivity
- One all samples analyzed with an EPA-approved method (yes/no)?
   Yes.
- 3. Analytical Methods
  - a. Has the operator consistently utilized the same analytical methodology during the monitoring program (yes/no)? Yes
  - b. Has the operator changed analytical laboratories during the monitoring program (yes/no)? No
  - c. Describe any inconsistencies and how the operator has tried to resolve them: t-test failures are attributed to fluctuating conditions due to the adjacent salt water intake canal.
- 4. What is the sample analysis turn-around time (i.e., the time required to receive results from the laboratory)? 3 to 4 weeks
- 5. Laboratory Quality Assurance/Quality Control (QA/QC)
  - a. Describe the laboratory's QA/QC program: One out of every 10 samples the lab will run a split and spike and a quarterly methods review against know spike samples.
  - b. Example of analytical results and/or QA/QC results as reported by the laboratory to the operator Attachment C-1.

- c. Do the results of the QA/QC program verify the validity and reliability of the laboratory and field-generated data (yes/no)? Yes
- 6. Review the operator's records of analytical results.
  - a. List parameters of initial year of sampling which exceed IPDWS - None
  - b. List parameters sampled as part of a Ground Water Quality
    Assessment Plan T.O.C., T.O.X., pH, Conductivity, Chloride,
    Iron, Manganese, Phenols, Sodium, Sulfates.
  - c. Describe any inconsistencies, such as parameters for which values vary with time, or for which reported detection limits increase through time or appear high relative to other wells, and describe how the operator has tried to resolve them: None
- 7. Overall, does the analysis program enable the reliable detection of, and for assessment purposes, the quantification of a release of bazardous constituents to ground-water from the monitored WNA (yes/no)? Yes
- 8. Pesults of co-sampling events:
  - a. Results of Operator Sample Analysis Operator did not co-sample the wells, units have been closed and certified clean closed at the time of the inspection. TWC has not evaluated the closure certification.
  - b. Results of TWC Sample Analysis
    - 1) COC Tags Attachment C-2
    - 2) Tabulated Inorganic Constituents Attachment C-3
  - c. Do TWC results confirm historic operator results (yes/no)? YES.
- 9. Describe the ground-water quality, based on TWC results, utilizing Stiff diagrams, tri-linear plots, etc., to compare inorquanic water quality between wells. Include the diagram(s) as Attachment C-4. Do the results indicate changes in ground-water quality downgradient of the WMA (yes/no)? No.

Comments: Monitor well 3 is the only well down gradient of the unit at the facility but is heavily affected by the Intake Canal (which contains sea water). The water in this well is sodium-chloride type. See Attachment C-5 for additional discussion of water quality parameters.

#### 10. Peleases to ground water:

- a. Were hazardous constituents detected by TWC sample analysis (yes/no)? NO. If yes, identify unit and constituents.
- b. Has the operator detected hazardous constituents in the ground water (yes/no)? NO. If yes, identify unit and constituents.
- c. Do the TWC sample results confirm operator results (yes/no)?
  Yes. If no, explain in comments.
- d. Do TWC sample results and/or operator results indicate non-hazardous constituents have been released from the WMA (yes/no)? Unknown. The location of the monitor well with respect to the cooling water intake canal makes it impossible to differentiate between possible non-hazardous constituents present in the units and the higher concentrations of these same constituents naturally occurring in the ground water.



# ANALYTICAL **PETROLEUM** RESEARCH

.aboratories, Inc.

YMHAMDI XXWEY CHE BUTTHELL NOTEDON

12301 KURLHAD

HUUSTÜN. TEXHS 77034

DECEIVER

NOV 25 1986

ENVIRONMENTAL PROTECTION DEPT. ENV. ASSESSMENT/SOLID WASTE

ATTENTION: MR. RICHARD BYE

NOVEMBER 19. 1966 INVOICE NO: 12062

SUBMITTED BY:

DUUG CHIN

DATE RECEIVED: GOTOBER 50. 1966

DATE OF SAMPLE: OCTOBER 30. 1986

LOCHTION: PH RUBINSON

CERTIFICATE

NUMBER

දපිපිපිප

DESCRIPTION OF SAMPLE \*\*\*\*\*\*\*

MW 1 - H

ANALYSIS OF SAMPLE ----

RESULTS OF SAMPLE 

ISEM UHUSICM

7.16

CONDUCTIVITY

با / قا*ا*م

TOTAL ORGANIC HALOGEN (0.005 MG/L

TOTAL ORGANIC CHREON

CHLURIDE

عاد

MIG/L

CHUN

6.3

ME / L

MANGANESE

ø. 30

パピノレ

PHENGLS

(0.005

ひばん ニ

SUDTUM

121.5

MG/L

1010 7 1

SULFATES

31

26693

MW 1 - 전

7.17

CONDUCTIVITY

1570 UHüS/cm

TOTAL ORGANIC CARBON 11.02 MG/L

TOTHL UNGANIC AHLOGEN (W. 605 MG/L

CONTINUED ON PAGE TWO (2)

PAGE THO

#### CERTIFICATE NUMBER 28498 THROUGH 28901

CERTIFICATE NUMBER 28900	DESCRIPT OF SAMPLI MW 1 - C	<u> </u>	ANALY: OF SAI OH	MPLE		RESULTS OF SAMP 7.26	LE
			CONDU	STIVITY		1380 UH	US/cm
			TÜTAL	ÜRĞAN1C	CARBON	16.3	MG/L
			TOTAL	ÜRĞANIC	HALDGEN	(0.005	MG/L
28901	mw 1 - D		он			7.19	
			CONDU	CTIVITY		1480 UH	109/cm
			TOTAL	ORGANIC	CARBON	11	MG/L
			TOTHL	ÜRĞANIC	HALŪGEN	(0.005	MG/L
ANALYSIS		DATE		TIME		ANALYST	
oH		10/31		1500		LHH	
CONDUCTIVITY		11/03		1600		LHH	
TOTAL GREANIC	CARBON	11/10		<b>୬</b> ୫୫୬		LHH	
TOTAL URGANIC	HALCGEN	11/13		1300		LHH	
CHLURIDE		11/12		1500		LHH	
IRÚM		11/07		1700		DBD	
MANGANESE		11/07		1600		นสน	
PHENÚLŠ		11/10		1466		LHH	
SUDIUM		11/17		1300		րթը -	
SULFATES		11/03		1100		LHH	

QUALITY ASSURANCE: THESE ANALYSES ARE PERFORMED IN ACCORDANCE WITH EPA GUIDELINES FOR QUALITY ASSURANCE. THESE PROCEDURES INCLUDE THE FULLOWING AS MINIMUM REQUIREMENTS: COMPARISONS AGAINST KNOWN STANDARDS IN EACH RUN. ONE IN TEN SAMPLE SPLITS. AND A QUARTERLY METHODS REVIEW AGAINST KNOWN SPIKE SAMPLES.

A P B ABORATORIES. INC.

Sammy Fussø

SR/mol

State Land Contract of the

$\mathbf{t}(G) := \mathbb{I}$	**	
33 46		was to have the
08.7	r	m 2000 640 641
1		60 6 5 5 6 5 C
e :		
•		
1023		
115911		1
111 :	)	1 1 10
	1.	
10	Çerinin İ	Programme Commence
• " a		40.40 40 (17.00)
	*: *	Section 1997
	1944 1 4	A second of
	1,1 1.	Stage of the Stage
	١,.	Equal During
	131	atrice ± 10 di ± 52;
	17 1 4 1	Cartinette
	1491	successful to the successful of the successful o
	1.11.	$(360,370,338)_{13} \pm$
	$AP_{A}$	and the second second
		1
		12 102 1
,		<b>₽</b> + -

 $(r_{ij} + \tilde{Q}_i r_{ij})^{-1} \leq (r_{ij} + r_$ 

 $2.364 \pm 2.27 \pm 4.3 \pm 4.3 \pm 6.3 \pm 6.3 \pm 6.4 \pm 6$ 

#### FREE CRESSING

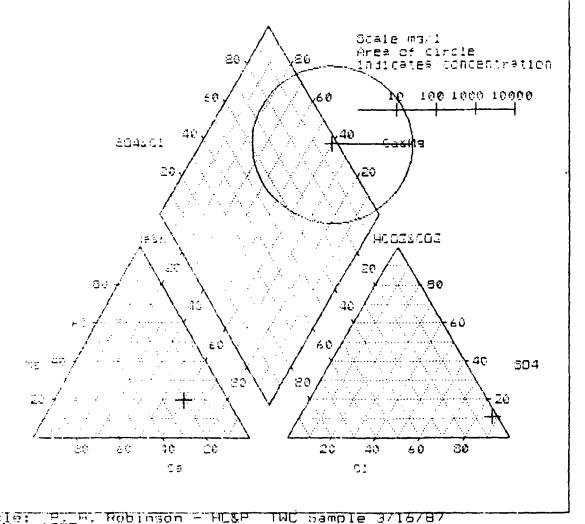
ni kasten indonto Engresentatuon Araivais Mathoda

version: HC-6344 1.40

1-85-1-37

11:21:47.62

Project: P. H. Robinson - HL&P TWC Sample 3/16/87



time. The nample aviator.

1:35:51784

Chemical Constituents in ppm

	្ឋិត្តវិធី ក្រុងពីវិធី	ří÷.	ř.	HC <b>6</b> 3	603	<u> </u>	NG5	FC4	Si	Fe
Five	92 1: 27 945.00 500	2154,00	19.00							14.00

Title: P. H. Robinson HUSP TWC Sample 3/16/87

# | Peport: P. H. Robinson - HL&P | TWC Sample 3/16/87 | 18:27:18:28

, .	** * }	2007							1.1	:07:10	<u>.05</u>			
	\$1 \$1		٠.		#101 . : :	ารางประกา	r i gga	663	504	7 !	403	F04	۶.	
	Pantla	lete	Ēs	Chemical Sg	Statiste	nts in Eq	rivalents HCU3	per #11	lion <sub>334</sub>	Cl	NO3	F)4	5i	
	46-8	11 (1/27)	15,21	44,75	137.43	),45	5.57	(.0)	25.19	201,14	0.00	9.90	),00	
	1	late	\ak \ak	สารอา ปฏิเศ ปฏิเศ	នាស្តី ខេត្ត ខ្មាំ ខេត្ត ខ្មាំ ខេត្ត	in y Égui	valents p	er <sup>4</sup> 2111	an 4883	51	SAF	<b>423</b>	250	
	4-1		50,20	21,48	17,4	9,23	0.00	10.84	2.49	35.73	20.3	22.29	-8e.28	

់ទីមិ	90	88	79	50	50	r <sub>i</sub> Ø	30	20	18	:	9	20	39	40	59	€9	79	80	90	168
								H	<del>1-</del> 3	1										
a‡K										:										C1
e. Th				<del>-</del>	<del>-</del>	_				<del></del>								<del></del>	-	01
7.4					ì	*****	• • • • • • • • • • • • • • • • • •	74		-			مسممه							нсоз
Mq		•							\											504
Fe									200	$\bigvee$										003



P. H. Robinson



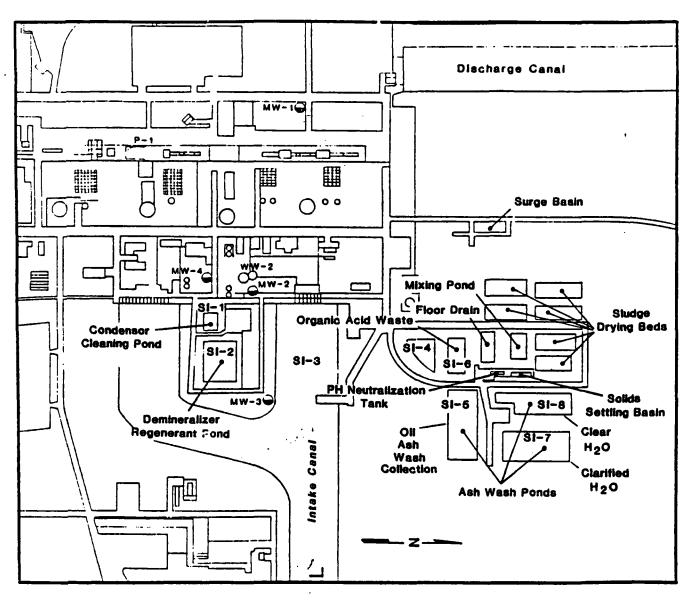


Figure 13. Location of Monitor Wells and Surface Impoundments at P.H. Robinson Generating Station



#### SUMMARY

Because of the locations of the monitor wells with respect to the cooling water intake canal, it is impossible to determine whether the surface impoundments at the P. H. Robinson Generating Facility are seeping fluids into the subsurface. However, Monitor Well Nos. 2 and 4 are yielding ground water with moderate chloride concentrations, unlike the low chloride wastewater in the surface impoundments immediately adjacent to them. This indicates that seepage, if any, from the surface impound-Monitor well No. 3, which has an elevated ments is not significant. chloride level, is immediately adjacent to the intake canal, which is the only high chloride source identified during this study. Well No. 4 had problems related to well completion that were at least partially mitigated by extended well jetting during this investigation. Use of the Student's t-test for Monitor Well Nos. 2, 3, and 4 will continue to indicate statistically significant differences between up-gradient and down-gradient wells because saltwater is entering the shallow aquifer sand.



# CONCLUSIONS

- 1. The designated down-gradient Monitor Wells Nos. 2, 3, and 4 have and will continue to have higher concentrations of dissolved solids than the up-gradient well due to impact by seepage of saltwater.
- 2. Due to the presence of the cooling water intake canal immediately adjacent to the surface impoundments on three sides, the geologic and hydrologic conditions surrounding Condenser Cleaning Impoundment (SI-1) and the Demineralizer Regenerant Impoundment (SI-2) preclude any meaningful monitoring for the indicator parameters specified in TAC 335.193(a)(b).
- 3. The piezometric surface in the vicinity of the hazardous waste surface impoundments does not appear to be mounded from surface impoundment seepage based upon the limited number of data points currently available.
- 4. The sediments underlying the surface impoundments that are designated as the first underlying aquifer are moderately permeable with an average estimated hydraulic conductivity of  $2.5 \times 10^{-3}$  cm/sec. The ground-water movement is to the east toward the intake structure at a rate of approximately 0.015 ft./day.
- Monitor Well No. 4 was probably affected by the cement used during well completion as evidenced by the high pH values in water samples collected prior to extended well jetting conducted during this investigation.
- 6. The surface impoundments contain low concentrations of chloride.



Therefore, the presence of moderate chloride concentrations in the fluids from Monitor Well Nos. 2 and 4 indicates the surface impoundments are probably not seeping at an appreciable rate. The high chloride concentrations in Monitor Well No. 3 are attributed to seepage from the cooling water in the canal which is immediately adjacent to Monitor Well No. 3.

- 7. There are no geologic features such as faults or fractures in the immediate area of the facility to provide an avenue for wastewater transport in the subsurface.
- 8. The deep aquifer which serves as a regional source of drinking water is overlain by 490 feet of clay-rich sediments and is not expected to be affected by the surface facility af the P. H. Robinson Generating Station.
- 9. The Student's t-test for pH and conductivity is not a suitable method for determining whether samples collected from the the monitor wells are impacted as a result of surface impoundment seepage at this facility. The presence of the cooling water intake canal immediately adjacent to these surface impoundments on three sides effectively masks any definitive indication of seepage from the surface impoundments.
- 10. The limitations of the Student's t-test are associated with the assumptions and conditions necessary to correctly utilize the procedure. The validity of the underlying assumption that in all undisturbed situations there is no natural, temporal (beyond one year), or areal variation in ground-water quality is questionable. These inherent limitations impugn the use of this procedure to monitor for the impact of hazardous waste facilities on the ground-water environment.

54



# RECOMMENDATIONS

HL&P anticipates that the hazardous waste surface impoundments will be closed during 1985-1986. Based upon the available water quality data for the monitor wells, impoundments, and the cooling water intake canal, there are no analytical parameters which may be monitored to differentiate between seepage from the hazardous waste impoundments and the cooling water intake canal. Because of this and the schedule for closure of the hazardous surface impoundment, it is recommended that no groundwater monitoring be required prior to closure of the hazardous waste impoundments.

No.GW 03457

# TEXAS DEPARTMENT OF WATER RESOURCES

P.O. Box 13087, Capitol Station Austin, Texas 78711

. No. 21 24 (19 <del>00)</del>
Org. No. 444
Sample No

Owner H /	P.P.H	Rebinso	Addres	SS - 100-y-A-i-i-i			
County Gal	vestan			·	_ Well No	3	
Location D	wagrad	ient			·		
Date Drillad			Depth_	25 €4	Aquifer		
W ter Level	Sample At	fter Pumping	1	Mins. (Hrs.) Yield	GF	PM Temperature	c <sub>F</sub>
Point of Collecti	on well Ire	ead		Арриатанов	Clear	1/ tribid has	<u>r⊳ /i</u> Color
l Ira			Remarks	s			(Over)
Duta Collected	7 3/10		-"-("10" Time 3	5.25 pm B	$r = \mathcal{T}(a_1)$	Linkers	e
				<u>←</u> T			
Sand copy of cor	might red analysis to	-		•		TDWR 0778 (I	Rev. 10-24-84)
					and the second of the second of the second		• to 10 to 5 to secret Contra
	457 Well head	L 14W-3	P.O. Box 130 Austin	IT OF WATER RESO 087, Capitol Station Texas 78711		Org. No Sample No	4003 411
Lab Used TD	4 额	<u>しかい-3</u> 17日	DEPARTMEN P.O. Box 130 Austin	IT OF WATER RESO 087, Capitol Station Texas 78711 W71112	d of Preservation	Org. No Sample No	441
Lab Used TD	•	<u>しかい-3</u> 17日	DEPARTMEN P.O. Box 130 Austin	IT OF WATER RESO 087, Capitol Station Texas 78711	d of Preservation	Org. No Sample No	441
Lab Used <u>TD</u> Type of Facility <u>R</u>	4 额	<u>しかい-3</u> 17日	P.O. Box 130 Austin Let Date Completed	IT OF WATER RESO 087, Capitol Station Texas 78711 W71112	d of Preservation	Org. No Sample No  ICE  Other Ions	444 0
Lab Used TD	Court General Manager Constant General Manager	178 178 ********************************	P.O. Box 130 Austin Let Date Completed Carbonate Elicarbonate	IT OF WATER RESONANT Capitol Station Texas 78711 W71112 Iletho	d of Preservation — st's Signature ——— EP1.1	Org. No Sample No	.444 
Lab Used	Court General Manager General	178 178 WORDE EPM 	DEPARTMEN P.O. Box 130 Austin Late Completed Carbonate Elicarbonate Sulfate	IT OF WATER RESONANT Capitol Station Texas 78711 W71112 Iletho	d of Preservation — st's Signature —— EP-1	Org. No Sample	.444 
Lab Used	Manuer General Manuer Green Man	178 178 WONCE EPM 	DEPARTMEN P.O. Box 130 Austin Laborate Carbonate Elicarbonate Sulfate Chloride	IT OF WATER RESONANT Capitol Station Texas 78711 W71112 Iletho	d of Preservation — it's Signature —  EPM	Org. No. – Sample	.444 
Lab Used	Court General Manager General	178 40000 EPM 	DEPARTMEN P.O. Box 130 Austin Late Completed Carbonate Elicarbonate Sulfate	Mg I	d of Preservation —	Org. No Sample	.444 
Type of Facility  Silica Calcium Magnesium Sodium  Potassium  Boron	Mal	178 178 WONCE EPM 	DEPARTMEN P.O. Box 130 Austin Let Date Completed Carbonate Elicarbonate Sulfate Chloride Fluoride Pluoride Nitrate-N pH	Mg I	d of Preservation —	Org. No. – Sample	.444 
Type of Facility  Silica Calcium Magnesium Sodium  Potassium  Boron	Mal	178 40000 EPM 	DEPARTMEN P.O. Box 130 Austin Let Date Completed Carbonate Elicarbonate Sulfate Chloride Fluoride Fluoride Nitrate-N pH Disselved Solids (ac	Mg I  Total	d of Preservation —	Org. No. – Sample	.444 
Lab Used TD  Type of Fastility II  Silica Calcium Magnesium Sodium  Protessium Di Boron Di Iron	Mg1  Mg1  Total	178 40000 EPM 	DEPARTMEN P.O. Box 130 Austin Letter Completed Carbonate Elicarbonate Sulfate Chloride Fluoride Fluoride Pluoride Dissolved Solids (at	Mg I  Total  Total  Total	d of Preservation —	Org. No. – Sample	.444 
Lab Used TD  Type of Fastility 1  Silica Calcium Magnesium	Mg1  Mg1  Total	178 40000 EPM 	DEPARTMEN P.O. Box 130 Austin Late Late Late Late Late Late Late Late	Mg I  Total  Total  Total  CCCO	d of Preservation —	Org. No Sample	.444 

No. HM 1	.0663 .		District Control		_ County=	1801 18 2 10 C	Basin		
Discharger Nor	no vient	H Laund	Ρ		. Time Col	lected			
Plant Name P	Il. Keb.	nson Gene	watter 5	la Aten	_ Point of	Collection _	Well he	ad nu	'- <sub>-</sub> 3
Method of Flow									
PERMIT N			DATE \$\frac{1}{2}\frac	Chlorine Contact Date Shipped Collector's Signa	100	92 - 7 1 1 1 1 1 1	1/200	7	<del></del>
			5111111	Concettor 3 Organia	·····	· · · · · · · · · · · · · · · · · · ·			
21 CODE	26 PARAN	METER VALUE	35 CODE   4	O PARAMETER V	ALUE 4	49 CODE	54 PARAME	TER VALUE 6	52
Flow (gpd)			Water Temperato	ure (°F)	рF				
00056			0 0 0 1 1		0	0 4 0	0		
D.O. (mg. 1)	-		Turbidity (JTU)						
0 3 0 0			0 0 0 7 0						
			1						
		<u> </u>	<del></del>						
TEXAS DEPAR No. HM 1 Type Sample: I	RTMENT OF .0563 Heavy Metals	WATER RESO District <u>Éकि</u>	URCES YOU Lab	Used T LI Material Sample Method of Prese	d: Raw. Pa	irtially Trea	ab N <b>EW</b>		
TEXAS DEPAR No. HM 1 Type Sample: I	RTMENT OF .0563 Heavy Metals	WATER RESO District <u>É देश</u> ी	URCES YOU Lab	Used T LI Material Sample	d: Raw. Pa	irtially Trea	ab N <b>EW</b>		
No. HM 1 Type Sample: I Grab 1-0-00	RTMENT OF .0663 Heavy Metals -:.3	WATER RESO District <u>ÉCO</u> Compo	URCES  You have  SiteHr.	Material Sample Method of Prese Type Facility Auxiliary Tags	d: Raw. Parvation	irtially Trea	ab N <b>EW</b>		
No. HM 1 Type Sample: I Grab 1-0-00	RTMENT OF .0663 Heavy Metals -:.3	WATER RESO District <u>ÉCO</u> Compo	URCES  You have  SiteHr.	Used	d: Raw. Parvation	irtially Trea	ab. N. FW		
No. HM 1 Type Sample: I Grab 1-0-00	RTMENT OF .0563 Heavy Metals	WATER RESO District <u>ÉCO</u> Compo	URCES  (Co.)  Lab  siteHr.	Material Sample Method of Prese Type Facility  Auxiliary Tags  Date Completed	d: Raw. Parvation	irtially Trea	ab. N. <b>EW</b>		2
No. HM 1 Type Sample: I Grab 1. C. C. Observations	RTMENT OF .0563 Heavy Metals	WATER RESO District <u>Can</u> Compo	URCES  (Co.)  Lab  siteHr.	Material Sample Method of Prese Type Facility  Auxiliary Tags  Date Completed  Analyst's Signatu	d: Raw. Parvation	irtially Trea	ab. N. <b>EW</b>		2
TEXAS DEPAI No. HM 1 Type Sample: I Grab 1.000 Observations	RTMENT OF .0563 Heavy Metals	WATER RESO District 上出い Compo	URCES  Y Lab  site Hr.  35 CODE 4	Material Sample Method of Prese Type Facility 1: Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	irtially Trea	ab. N. <b>EW</b>		2
TEXAS DEPAI No. HM 1 Type Sample: I Grab 1.000 Observations	RTMENT OF .0563 Heavy Metals	District Compo	URCES  Y Lab  site Hr.  35 CODE 4	Material Sample Method of Prese Type Facility 1: Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	irtially Trea	ab. N. <b>EW</b>		2
TEXAS DEPAI No. HM 1 Type Sample: I Grab 1. C.	RTMENT OF .0563 Heavy Metals	District Compo	SiteHr.  35 CODE 4	Material Sample Method of Prese Type Facility 1: Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	irtially Trea	ab. N. <b>EW</b>	TER VALUE 6	2
No. HM 1 Type Sample: I Grab 1 Observations 2 21 CODE Arsenic Cadmium	RTMENT OF .0563 Heavy Metals	District Compo	SiteHr.  35 CODE 4	Material Sample Method of Prese Type Facility 1: Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	irtially Trea	ab. No. <b>EW</b>	TER VALUE 6	2
TEXAS DEPAIR No. HM 1 Type Sample: I Grab 1 Observations 2 21 CODE Arsenic Cadmium	RTMENT OF .0563 Heavy Metals	District Compo	Site Hr.  35 CODE 4  Barium  Chromium	Material Sample Method of Prese Type Facility Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	irtially Trea	ab. No. <b>EW</b>	TER VALUE 6	2
TEXAS DEPAIR No. HM 1 Type Sample: I Grab 1 Observations 2 21 CODE Arsenic Cadmium	RTMENT OF .0563 Heavy Metals	District Compo	Site Hr.  35 CODE 4  Barium  Chromium	Material Sample Method of Prese Type Facility Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	irtially Trea	ab. No. <b>EW</b>	TER VALUE 6	2
TEXAS DEPAI No. HM 1 Type Sample: I Grab Cobservations	RTMENT OF .0563 Heavy Metals	District Compo	Site Hr.  35 CODE 4  Barium  Chromium  Manganese	Material Sample Method of Prese Type Facility Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	19 CODE	ab. No. <b>EW</b>	TER VALUE 6	2
TEXAS DEPAI No. HM 1 Type Sample: I Grab Cobservations	RTMENT OF .0563 Heavy Metals	District Compo	Site Hr.  35 CODE 4  Barium  Chromium  Manganese	Material Sample Method of Prese Type Facility Auxiliary Tags Date Completed Analyst's Signatu O PARAMETER V	d: Raw. Parvation	19 CODE	ab. No <b>EW</b>	TER VALUE 6	2

# **CLOSURE PLAN**

**FOR** 

# THREE HAZARDOUS WASTE SURFACE IMPOUNDMENTS

AT THE

# P.H. ROBINSON GENERATING STATION

**FOR** 

# HOUSTON LIGHTING & POWER COMPANY HOUSTON ,TEXAS

FEBRUARY, 1985

344-01

\* Attachment to letter

RESOURCE ENGINEERING 2-1185

# The Light company

COMPANY Houston Lighting & Power P.O. Box 1700 Houston, Jexas 77001 (713) 228-9211

July 9, 1985

Mr. Jay Snow, P. E. Chief, Solid Waste Section Texas Department of Water Resources P. O. Box 13087, Capitol Station Austin, Texas 78711



Dear Mr. Snov:

SUBJECT: WEBSTER GENERATING STATION - TOWN NO. 31633
P. H. ROBINSON GENERATING STATION - TOWN NO. 31638
SUPPLEMENTS TO CLOSURE PLANS FOR HAZARDOUS WASTE
SURFACE IMPOUNDMENTS

Closure plans for hazardous waste surface impoundments at the above-referenced facilities were submitted on February 11, 1985. Your letters of April 15, 1985, discussed deficiencies in the closure plans and requested additional information for use in your evaluation. Supplements to the closure plans were therefore submitted on May 6, 1985. Subsequent review of the closure plans and May 6 supplements by Mr. Dwight Russell (TDWR) resulted in a request for additional testing to certify closure. Submitted herewith are additional closure plan supplements prepared in response to Mr. Russell's comments.

Your expeditions review and approval will be appreciated since, as stated in the closure plans, HL&P had intended to initiate closure on June 1, 1985, and will initiate closure immediately upon TDWR approval.

Please contact Dr. R. D. Groover, 713/922-2195, if you have any questions.

. McGuire, Manager

Environmental Protection Department

## SUPPLEMENT TO

# CLOSURE PLAN FOR THREE HAZARDOUS WASTE IMPOUNDMENTS AT THE P.H. ROBINSON GENERATING STATION TOWN NO. 31638

HOUSTON LIGHTING & POWER COMPANY
HOUSTON, TEXAS

JULY 1985

DECOMBAR PRAIRIES

# SEQUENCE OF SAMPLING

For purposes of waste classification prior to disposal as outlined in Sec. 3.3, Sludge Thickness and Analysis and Clay Liner Testing, a composite sample of the sludge and first foot of clay liner will be collected and analyzed for pH and the EP Toxicity metals. All the sludge and one (1) foot of clay material from the surface of the clay liner will be removed and disposed prior to further sampling the clay liner.

# ADDITIONAL ANALYTICAL COMPARISONS AND ANALYSES

In addition to the pH and EP metals toxicity analyses specified in Section 3.3 and the supplement submitted May 6, 1985, seven surface samples of the exposed clay liner and sidewalls will be collected and an analysis for total metals will be performed for the eight EP toxicity metals to demonstrate absence of hazardous waste constituents. Sample collection points will be as described in the May 6 supplement.

These results will be compared to three (3) background samples taken in the vicinity of the impoundments and known literature values for soil samples. These background samples will be composites of the top two feet of soil. If the liner total metals concentrations are within the range of these background samples and known natural soil variations, the impoundments will be considered decontaminated of hazardous waste constituents.

In addition, a 24-hour modification of the TDWR leachate test will be performed on the liner samples from the inorganic metal cleaning impoundment and the demineralizer impoundment. These samples will be analyzed for sulfate and chloride. These results will be compared to values for background soil samples and to groundwater monitoring data available from the groundwater monitoring program at the power plant. If the leachate concentrations are not significantly different from the background soil and groundwater data, the impoundments will be considered free of Class II waste.

# ADDITIONAL SOIL BORINGS

addition shallow borings in the to the four demineralizer and mixing impoundments as specified in Section 4.0, POST-CLOSURE ACTIVITIES, two (2) additional borings will be placed in the sidewall of each impoundment near the sampling locations identified in the May 6 supplement. All six borings will be used to verify the liner characteristics as specified liner Technical Guideline the TDWR No. 4. If characteristics are not in accordance with TDWR Guideline No. clay liner will be reworked and recompacted or additional clay will be placed as necessary to meet guideline recommendations.

# The Light Company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

May 6, 1985

original family

Mr. Jay Snow, P.E. Chief, Solid Waste Section Texas Department of Water Resources P. O. Box 13087, Capitol Station Austin, Texas 78711

Dear Mr. Snow:

SUBJECT: P. H. ROBINSON GENERATING STATION - TDWR NO. 31638 Supplement to Closure Plan for Hazardous Waste Surface Impoundments

A closure plan for hazardous waste surface impoundments at this facility was submitted on Pebruary 11, 1985. Your letter of April 15, 1985, discussed deficiencies in the closure plan and requested additional information for use in your evaluation. Attached is a supplement to the closure plan which addresses the comments in your letter.

Your expeditious review and response to the enclosed material will be appreciated since, as stated in the closure plan, HL&P intends to initiate closure on or about June 1, 1985, pending TDWR review and approval.

Please contact Dr. R. D. Groover, 713/922-2195, if you have any questions.

Sincerely,

W. P. McGuire, Manager

Environmental Protection Dept.

BAD/rmg Attachment

# SUPPLEMENT TO

# CLOSURE PLAN FOR THREE HAZARDOUS WASTE SURFACE IMPOUNDMENTS AT THE P. H. ROBINSON GENERATING STATION TOWN NO. 31638

HOUSTON LIGHTING & POWER COMPANY
HOUSTON, TEXAS

## CLAY LINER/SLUDGE TESTING AND SAMPLING LOCATIONS

Houston Lighting & Power Company (HLEP) will collect representative samples of sludge and the clay liner, including sidewalls, for each surface impoundment discussed in the closure plan. In addition to the sludge and clay liner samples referred to in Section 3.3 of the closure plan, two (2) samples of the sidewall clay liner will be collected at depths of 0-2 inches and 6 inches for pH testing. An additional two (2) samples will be taken at the impoundment sidewalls from a depth of 0-2 inches for EP Toxicity metals testing. Sample locations for each surface impoundment are shown on the enclosed scale drawings.

## CONTINGENCY PLAN

Based on previously accepted closure plans and closure activities at four HLEP facilities, we cannot envision a situation where we would not close the above mentioned surface impoundments under TAC 335.469. If excavation should prove to be necessary, we will excavate to the extent required to insure that no hazardous constituents remain. This procedure is addressed in Section 3.5 of the closure plan. In the event that all hazardous constituents cannot be removed from the surface impoundment(s) or treated as specified in the closure plan, HLEP will notify the Executive Director, Texas Department of Water Resources (TDWR), that it is unable to certify compliance with the approved closure plan.

## LABORATORY ANALYSES

HLAP will submit, within 20 days of completion of sampling and analysis, copies of all final laboratory analyses. This will be

submitted as part of the Professional Engineer's Certification of Closure.

## HAZARDOUS WASTE CONSTITUENTS

The attached statement, signed by an HL&P vice-president, states that no listed hazardous waste constituents, other than those indicated in the closure plan, are believed to be, or to have been, present in the waste streams of these impoundments. As stated in the closure plan, the wastes are classified as hazardous only on the basis of corrosivity.

#### SLUDGE DRYING BEDS

Samples of any sludges remaining in the sludge drying beds will be collected and tested for pH to verify their nonhazardous classification. Data will be provided to TDWR as part of closure certification.

#### APPIDAVIT OF EXCLUSION

It has always been the intent of HLLP to submit an affidavit of exclusion from hazardous waste permitting requirements to the Executive Director (TDWR) upon completion of closure activities and certification of closure.

## WASTEWATER TREATMENT UNIT

TDWR staff assumed that the fiberglass-lined concrete tank to be constructed for collection of demineralizer regenerant wastes will be classified as an elementary neutralization unit. As discussed in Section 3.7 of the closure plan, we are designating the tank as a

"wastewater treatment unit" as defined in 31 TAC 335.42, since it is part of a permitted wastewater treatment system under Section 402 of the Pederal Water Pollution Control Act as amended (33 USC 466 et seq.). The tank, therefore, will be exempt from solid waste permitting requirements under 31 TAC 335.41(d)(1). We have closed four other HL&P facilities in a similar manner.

# STATEMENTS REGARDING LISTED HAZARDOUS WASTE CONSTITUENTS AT P. H. ROBINSON GENERATING STATION

I, Larry B. Horrigan, Jr., Vice-President, Fossil Plant Engineering and Construction, Houston Lighting & Power Company, do hereby state that, to the best of my knowledge, no listed hazardous waste constituents, other than those indicated in the closure plan, are believed to be, or have been, present in the waste streams of these impoundments.

As stated in the closure plan, the wastes are classified as hazardous solely on the basis of corrosivity.

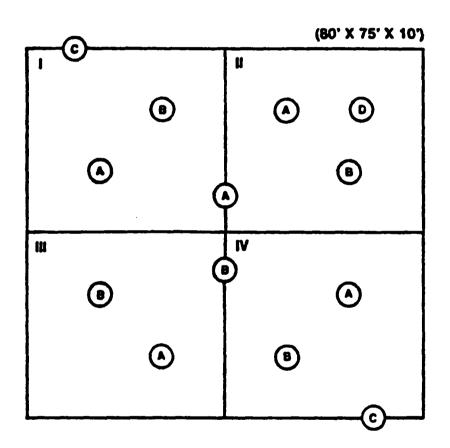
Date 1/12 20 1365

L. B. Horrigan, Jr.

Vice-President

Possil Plant Engineering and Construction

P. H. Robinson Generating Station Inorganic Metal Cleaning Impoundment Proposed Clay Liner and Sludge Sample Locations



O = Sample points

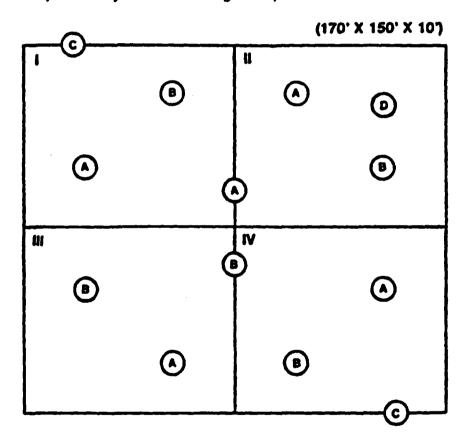
A = EPtox and pH - clay liner

B = pH only - clay liner

C = EPtox and pH at impoundment sidewalls - clay liner

D = EPtox and pH - sludge

P. H. Robinson Generating Station
Demineralizer Regenerant Surface Impoundment
Proposed Clay Liner and Sludge Sample Locations



O = Sample points

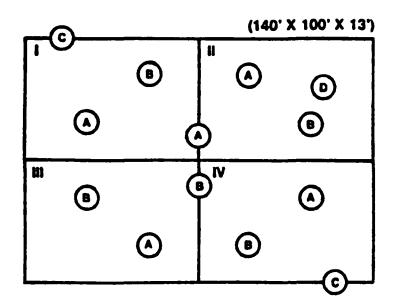
A = EPtox and pH - clay liner

B = pH only - clay liner

C = EPtox and pH at impoundment sidewalls - clay liner

D = EPtox and pH - sludge

P. H. Robinson Generating Station
Demineralizer Regenerant / Non-Oily Floor Drain
Mixing Surface Impoundment
Proposed Clay Liner and Sludge Sample Locations



O = Sample points

A = EPtox and pH - clay liner

B = pH only - clay liner

C = EPtox and pH at impoundment sidewalls - clay liner

D = EPtox and pH - sludge

# Table of Contents

	Desc	ription	Page
1.0	PURP	POSE OF CLOSURE PLAN	1
2.0	IMPO	OUNDMENT DESCRIPTION	4
	2.1	Impoundment History	4
		2.1.1 Demineralizer Regenerant Surface	
		Impoundment	4
		2.1.2 Inorganic Metal Cleaning Impoundment	4
		2.1.3 Demineralizer Regenerant/Non-Oily	
		Floor Drain Mixing Surface Impoundment	6
	2.2	Waste Evaluation	7
		2.2.1 Influent Wastestreams	7
		2.2.2 Sludges	7
3.0	CLOS	URE PROCEDURE	10
	3.1	Termination of Discharge into the Inorganic	
		Metal Cleaning Impoundment	11
	3.2	Discharge of Wastewater	11
	3.3	Sludge Thickness and Analysis and	
		Clay Liner Testing	11
	3.4	Removal of Sludge	12

# Table of Contents (continued)

	Description	Page	
	3.5 Liner Soils Neutralization (if necessary)	13	
	3.6 Closure Certification	15	
	3.7 Concrete Sump and Tank Construction	15	
	3.8 Demineralizer Regenerant Surface Impoundment		
	and Mixing Surface Impoundment Closure	17	
4.0	POST-CLOSURE ACTIVITIES	18	
5.0	GROUNDWATER MONITORING21		
6.0	NOTIFICATION23		
7.0	CERTIFICATION	23	
	LIST OF TABLES		
1.	EP Toxicity Characteristics of	•	
	P.H. Robinson Impoundment Wastewaters	8	
2.	EP Toxicity Characteristics of		
	P.H. Robinson Impoundment Sludges	9	
3.	Potential Sampling Results and Proposed		
	Plan of Action During Closure	14	
4.	Class II Impoundment Liner Characteristics	20	

# LIST OF FIGURES

1. Map of P.H. Robinson Facility ...... 5

# **ATTACHMENTS**

I Typical Discharges to Each Impoundment

# 1.0 PURPOSE OF CLOSURE PLAN

P.H. Robinson Generating Station is currently The classified as a hazardous waste treatment, storage, disposal (TSD) facility under the Industrial Solid Waste Rules of the Texas Department of Water Resources (TDWR). The power plant generates two major waste streams which are classified as by state and federal regulations: hazardous demineralizer regenerant and the acid phase of an equipment chemical cleaning hydrochloric acid is used. Both waste streams are classified as corrosive and therefore hazardous because the pH of phases of these wastes may be less than 2 when the wastes are routed to the receiving surface impoundments. The waste streams in these surface impoundments are then routed to a chemical waste treatment system for treatment, including pH adjustment. After treatment, the wastewaters are discharged via the facility's permitted NPDES/TDWR outfall.

Houston Lighting & Power Company (HL&P) plans to eliminate storage of hazardous wastes in the impoundments by constructing a lined concrete tank to receive all wastewater that could potentially have a pH less than 2 or greater than 12.5. These wastewater streams will include the demineralizer regenerant and wastewater which drains from the chemical waste treatment area and the plant laboratory.

Utilization of a lined concrete tank for this waste will meet the exemption requirements of EPA TSD Permitting Standards

40 CFR 264.1 Purpose, Scope, and Applicability. Specifically, 264.1 (g)(6) reads:

•

- (g) "The requirements of this Part do not apply to:
  - (6) The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in 40 CFR 260.10 of this chapter."

Section 40 CFR 260.10 requires the unit to be constructed of non-earthen materials like concrete, to be self-supporting, and to be part of an NPDES-regulated wastewater treatment facility. The proposed unit will meet all regulatory criteria for exemption from RCRA requirements. Waste stored in the concrete tank will be treated in the chemical waste treatment system to meet NPDES/TDWR discharge standards. The treated wastewater will be classified as non-hazardous.

This closure plan is developed to meet the requirements of Chapter 31 of the Texas Administrative Code (TAC) Section 335, Subchapter V which reads as follows:

"31 TAC 335.469 Closure and Post-Closure Care (Surface Impoundments).

- (a) At closure, the owner or operator must:
  - (1) Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with

waste and leachate, and manage them as hazardous waste unless 40 CFR 261.3(d) applies; or

- (2) Eliminate free liquids by removing liquid wastes or solidifying the remaining wastes to a bearing capacity sufficient to support final cover; and cover the surface impoundment with a final cover designed and constructed to:
  - (A) Provide long-term minimization of the migration of liquids through the closed impoundments;
  - (B) Function with minimum maintenance;
  - (C) Promote drainage and minimize erosion or abrasion of the final cover:
  - (D) Accommodate settling and subsidence so that the cover's integrity is maintained; and
  - (E) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present."

HL&P intends to close the three surface impoundments in accordance with 31 TAC 336.469 (a)(1) by demonstrating that all hazardous waste constituents have either been removed, are not present, or are neutralized during the closure process.

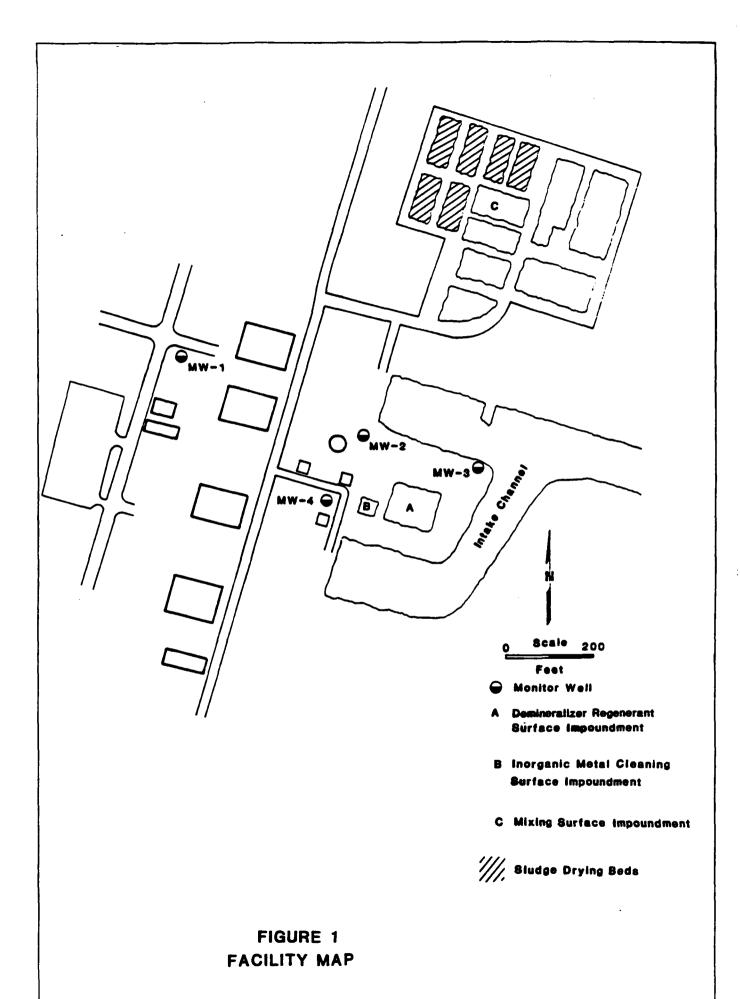
The sampling programs and other information presented herein are designed to fulfill this demonstration.

#### 2.0 IMPOUNDMENT DESCRIPTION

The P.H. Robinson Generating Station currently uses two storage impoundments for low pH wastewater and one for mixing demineralizer regenerant with various non-oily floor drains and stormwater, as shown on Figure 1. The impoundments' history and waste contents are described below.

### 2.1 Impoundment History

- 2.1.1 <u>Demineralizer Regenerant Surface Impoundment</u> The impoundment has approximate dimensions of 170 feet by 150 feet by 10 feet deep. It was placed in service in 1966 as a clay lined impoundment for the collection and equalization of demineralizer regenerant, inorganic acid equipment cleaning and laboratory wastes prior to treatment. Sludge accumulated on the impoundment bottom is periodically removed for off-site disposal.
- 2.1.2 <u>Inorganic Metal Cleaning Impoundment</u> The dimensions of the inorganic metal cleaning impoundment are approximately 80 feet by 75 feet by 10 feet deep. The impoundment was originally part of the demineralizer impoundment until 1978 when an earthen dike was built across the demineralizer impoundment forming the inorganic metal clean-



ing impoundment. The impoundment has received, on an infrequent basis, metal cleaning inorganic acids from equipment cleaning operations. The last HCl cleaning was for the lube oil coolers in 1982. Since January 1984, it has received only municipal water supply filter backwash which is then pumped into an auxiliary cooling tower as make-up water. Sludge accumulated on the impoundment bottom is periodically removed for off-site disposal.

Boiler and condenser cleanings at this facility are with organic acid. No HCl boiler cleanings are anticipated in the future. HCl cleanings of heat exchangers will occur and all wastes will be disposed of off-site. Trucks or tanks will be used to contain the waste prior to offsite disposal.

Mixing Surface Impoundment - The mixing impoundment was placed in service in 1978. Its dimensions are 100 feet by 140 feet by 13 feet deep. The impoundment receives plant regenerant wastes pumped from the demineralizer regenerant impoundment, recycled wastewater from the chemical waste treatment system, drainage from the chemical waste treatment system, underflow from the sludge drying beds, and wastewater from the floor drain surge pond.

### 2.2 Waste Evaluation

2.2.1 <u>Influent Wastestreams</u> - Complete descriptions of the influent wastestreams to each of the impoundments are given in Attachment I. The results of EP Toxicity tests are given in Table 1.

The wastewaters exhibit no EP Toxicity. the chemicals mentioned in Attachment I only two are contained in 40 CFR 261.33(e) or (f) or in Appendix VIII: formaldehyde and acrylamide. The formaldehyde is part of the lube oil cooler cleaning and the carboxylated emulsion polyacrylamide is used in water treatment. The formaldehyde composes only 3-5% of Rodine 213 which was used as part of the lube oil cooler cleaning once in 1982. The polyacrylamide is used as a coagulant in the wastewater treatment system prior discharge. The drainage from the treatment area and recycled unneutralized wastewater are routed to the mixing impoundment. and polyacrylamide are Both formaldehyde verv minor constituents. Hence, it is held that neither is present in the impoundments.

2.2.2 <u>Sludges</u> - Results from E.P. Toxicity testing of sludge samples from two of the impoundments are shown in Table 2. Based on these results, HL&P requested, and was granted, a reclassification of the sludge in both impoundments

TABLE 1 EP Toxicity Characteristics of P.H. Robinson Impoundment Wastewaters<sup>1</sup>

Constituent	EP Toxicity Concentration <sup>2</sup> (mg/L)	Demineralizer Regenerant Impoundment (mg/L)	Inorganic Metal Cleaning Impoundment (mg/L)
Arsenic	5.0	<0.05	<0.05
Barium	100.0	1.3	1.3
Cadmium	1.0	<0.05	<0.05
Chromium	5.0	<0.05	<0.05
Lead	5.0	<0.1	<0.1
Mercury	0.2	<0.005	<0.005
Selenium	1.0	<0.05	<0.05
Silver	5.0	<0.05	<0.05
Endrin	0.02	<0.02	<0.02
Lindane	0.4	<0.4	<0.4
Methoxychlor	10.0	<1.0	<1.0
Toxaphene	0.5	<0.5	<0.5
Dichlorophenoxyacetic acid	10.0	<1.0	<1.0
Trichlorophenoxypropionic acid	1.0	<1.0	<1.0

Data developed by HL&P in 1981 as per RCRA waste analysis requirements.
2 Maximum concentrations from 40 CFR 261; 48 FR 15256 - maximum concentration of contaminants for characteristic of EP toxicity.

TABLE 2

EP Toxicity Characteristics of

P.H. Robinson Impoundment Sludges<sup>1</sup>

Constituent	EP Toxicity Concentration <sup>2</sup> (mg/L)	Demineralizer Regenerant Impoundment (mg/L)	Inorganic Metal Cleaning Impoundment (mg/L)
Arsenic	5.0	<0.05	<0.05
Barium	100.0	4.0	2.0
Cadmium	1.0	<1.0	<0.05
Chromium	5.0	<1.0	<0.05
Lead	5.0	<.0	<0.1
Mercury	0.2	<0.01	<0.005
Selenium	1.0	<0.05	<0.05
Silver	5.0	<1.0	<0.05
Endrin	0.02	<0.02	<0.02
Lindane	0.4	<0.4	<0.4
Methoxychlor	10.0	<1.0	<1.0
Toxaphene	0.5	<0.5	<0.5
Dichlorophenoxyacetic acid	10.0	<1.0	<1.0
Trichlorophenoxypropionic acid	1.0	<1.0	<1.0

Data developed by HL&P in 1981 as per RCRA waste analysis requirements. Material currently listed on TDWR registration as Class II.

<sup>2</sup> Maximum concentrations from 40 CFR 261; 48 FR 15256 - maximum concentration of contaminants for characteristic of EP toxicity.

from Class I to Class II waste. Since the mixing impoundment receives the regenerant water, its sludge should be of similar composition. Therefore, the only hazardous characteristic of concern in any of the impoundments is corrosivity due to periodic events of low pH wastewater.

The wastewater from the impoundments is treated and discharged under NPDES/TDWR limitations and the sludges handled as Class II waste. The only remaining component that would contain hazardous constituents is the clay liner underlying each impoundment. Infiltration of hazardous constituents may have occurred during the life of the impoundment. As a result, an extensive testing program is outlined in the closure plan to determine the extent to which, if at all, the liner has been infiltrated. This information will be used to determine how much, if any, of the liner will have to be neutralized and/or removed to comply with the TAC 355.469 (a)(1) and (c) closure requirements.

#### 3.0 CLOSURE PROCEDURE

Closure of the inorganic metal cleaning impoundment at the P.H. Robinson Generating Station will begin on June 1, 1985 (subject to approval by TDWR) and will consist of these steps:

# 3.1 <u>Termination of Discharge into the Inorganic Metal</u> Cleaning Impoundment

Day from start: 0

Time to complete: 1 day

All discharge into the impoundment will cease. The filter backwash water line will be rerouted into the demineralizer impoundment. Wastewater lines to the impoundment will be rinsed with fresh water. All above grade wastewater lines and fittings going to the impoundment will be removed.

# 3.2 <u>Discharge of Wastewater</u>

Day from start: 1

Time to complete: 7 days

Wastewater in the inorganic metal cleaning impoundment will be pumped into the chemical waste treatment system for treatment and discharge. Normally the impoundment can be emptied in about two days. However, seven days are allowed as a contingency for rainy weather.

# 3.3 Sludge Thickness and Analysis and Clay Liner Testing Day from start: 8

Time to complete: 3 days

The depth of the sludge will be probed at various locations. This information will be used to estimate sludge volume and to get an estimated sludge density to ascertain the need for fly ash solidification. In addition, a sample of the sludge will be taken and analyzed for pH and EP toxicity metals to confirm the Class II classification.

The clay liner will be tested for EP Toxicity metals and pH. A total of twenty (20) samples will be taken for pH determination. Ten (10) samples will be taken at a depth of 0-2 inches and ten (10) samples will be taken at a depth of six (6) inches. An additional five (5) samples will be taken from 0-2 inches in depth for EP Toxicity metals testing.

Sample locations will be determined by establishing a grid to provide representative samples of the entire liner surface.

The pH samples will be analyzed using a portable pH meter according to Section 150.1 of <u>EPA Methods for the Analysis of Water and Wastewater</u> EPA-600/4-79-020.

EP metals toxicity samples will be analyzed according to Appendix II of 40 CFR 261.24.

## 3.4 Removal of Sludge

Day from start: 11

Time to complete: 3-5 days

Based on operational history, the sludge is not expected to be more than three to four inches deep. Also, the sludge is not expected to require dewatering as it historically has been fairly dense. Should dewatering be necessary, fly ash will be used to solidify the sludge and absorb any free liquids prior to removal. However, if required, solidification will add to the time required to complete this step.

A front-end loader will be used to remove the sludge. Care will be taken to disturb the underlying clay liner as little as possible. If the sludge is a hazardous waste, it will be transported to a Class I hazardous landfill. If the sludge is non-hazardous, it will then be transported by dump truck to a Class II disposal facility for proper disposal.

# 3.5 Liner Soils Neutralization (if necessary)

Day from start: 14-16

Time to complete: 2-7 days

The results from the liner testing described in step

3.3 will be used to determine whether neutralization and/or
further testing will be necessary to complete the closure
activities. Table 3 outlines the possible analytical results
and the actions taken in response to each.

If field measurements of pH indicate neutralization is necessary, the clay liner will be neutralized by lime disking to obtain a pH level between 6 and 9. It has been determined that disking will be effective to a depth of eight inches. If 6-inch core samples show pH in the clay liner to be less than 6 at a depth greater than six inches, the clay liner will be excavated to a depth sufficient to remove the contaminated materials and the remaining clay liner will be neutralized by lime disking to a pH level between 6 and 9. The results will be verified with field surface and core samples as described in Table 3 and Section 3.3.

# TABLE 3 Potential Sampling Results and Proposed Plan of Action During Closure

# pH Measurements of the Clay Liner

#### Results

#### Action

Surface values 6 to 9 core samples 6 to 9

None

Surface values <6 core samples 6 to 9

Neutralize (liming/disking\*) to pH 6-9; verify with field core samples

Surface values <6 core samples<6

Verify depth of <6 pH with deeper cores; excavate to remove contaminated layer; neutralize (liming/disking) to pH 6-9; verify with field surface and core samples

# EP Metals Toxicity Measurements of the Clay Liner

#### Results

### Action

No EP metals toxicity values at hazardous levels in surface samples

No action required

EP metals toxicity values are hazardous for one or more parameters in surface samples; no hazardous levels in 6-in. core samples

Excavate top 6-in.; resample for EP metals toxicity to verify removal

EP metals toxicity values are hazardous in both surface and 6-in. core samples

Take deeper core samples to determine depth to which hazardous levels are present; excavate to remove hazardous constituents; verify removal with additional samples analyzed for EP metals toxicity

<sup>\*</sup>As discussed in Section 3.8, liquid sodium hydroxide may be employed initially in the demineralizer and mixing impoundments.

This neutralization/testing program is proposed in lieu of determining the pH of background soils and treating and/or removing the clay liner to a comparable background soil pH. Any hazardous soils removed from the impoundment will be disposed in an off-site Class I hazardous landfill.

# 3.6 Closure Certification

Day from start: 16-23

Time to complete: 7 days

After completion of the above procedures, a report detailing the closure activities, results of analytical testing and a closure certification by a registered professional engineer will be submitted to the TDWR.

# 3.7 Concrete Sump and Tank Construction

Day from start: 23-30

Time to complete: 150 days

A one million gallon fiberglass lined concrete tank will be constructed where the existing sand filter beds are located for the collection and temporary storage of demineralizer regenerant prior to routing to the Chemical Waste Treatment System (CWTS) for treatment and NPDES discharge. The tank will qualify as a "wastewater treatment unit" as defined in 31 TAC 335.42 since it is part of a permitted wastewater treatment system under Section 402 of the Federal Water

Pollution Control Act as amended (33 USC 466 et seq.). The tank will, therefore, be exempt from solid waste permitting requirements under 31 TAC 335.41(d)(1).

Specifications for installation of the fiberglass lining in the tank require that the concrete surface temperature be between 550 and 110°F and the ambient temperature be no less than 40°F within a 24 hour period. temperatures required for proper installation of the lining dictate that construction be initiated as soon as practical. This will ensure adequate warm weather to complete the project.

Upon certification of the inorganic metal cleaning impoundment closure, construction will begin on a 30,000 gallon fiberglass lined concrete sump in the inorgainc metal cleaning impoundment location which will be used to collect all plant demineralizer regenerant wastes prior to being pumped to the lined concrete tank. This sump will qualify as a "wastewater treatment unit" as defined in 31 TAC 335.42. According to this definition, the sump is part of a permitted treatment system under Section 402 of the Federal Water Pollution Control Act as amended (33 USC 466 et seq.). The sump will be exempt from solid waste permitting requirements under 31 TAC 335.41(d)(1).

Specifications for the fiberglass lining of the sump are the same as those for the tank.

# 3.8 <u>Demineralizer Regenerant Surface Impoundment and</u> Mixing Surface Impoundment Closure

Day from start: 173 - 180

Time to complete: 28 - 30 days

Following completion of the lined concrete sump and tank, demineralizer regenerant and filter backwash water will from the demineralizer regenerant rerouted surface impoundment and the demineralizer regenerant/non-oily drain mixing surface impoundment to the new tank and discharges to these impoundments will cease. Drains from CWTS equipment area will also be routed to the new tank. The equalization valve between the mixing impoundment and the floor drain surge pond will be closed and the lines entering the impoundment from the sludge drying beds and demineralizer regenerant impoundment will be capped. The demineralizer regenerant lines will be present, but cut upstream of the impoundments. At this time closure of these impoundments will begin. The closure procedure for these impoundments will be identical to that for the inorganic metal cleaning impoundment (including certification) with the exception of Steps 3.5 and 3.7.

If necessary, a flexible approach will be utilized in the field for neutralization of both the current demineralizer regenerant surface impoundment and mixing impoundment. An

attempt will initially be made to neutralize the clay liner of these impoundments with liquid sodium hydroxide to a pH level between 6 and 9. It is not feasible to calculate the quantity of buffering solution required to neutralize a clay liner without extensive sampling and analytical work. If surface and 6-inch core samples of the clay liner indicate that liquid sodium hydroxide does not completely neutralize the liner to the depth required, liming and disking procedures will be followed as described in 3.5. As mentioned previously, eight inches is deemed an effective depth to disk with lime. area of contamination deeper than eight inches will require excavation followed by field verification of pH values in surface and core samples. Following liming and disking (if necessary), the liner will be resampled and recompacted to allow usage of the impoundment as a non-hazardous waste storage facility. Prior to such usage, the liner will be tested as described in Section 4.0.

The liner will contain no hazardous constituents and be at a pH of 6 to 9 before closure is certified. Any clay which is hazardous by EP Toxicity or cannot be neutralized will be hauled off-site to a Class I hazardous landfill.

# 4.0 POST-CLOSURE ACTIVITIES

The inorganic metal cleaning impoundment will be replaced by a fiberglass lined concrete sump. The sump will receive the

demineralizer regenerant prior to transfer to the fiberglass lined concrete tank which discharges to the CWTS and NPDES permitted discharge.

After closure of the demineralizer impoundment, an earthen dike will be erected in the west end of the impoundment to create a holding area (60,000 gallons) for the filter backwash water. The east end of the impoundment will be filled with enough dirt to prevent ponding of rainwater. Pumps currently drawing suction from the inorganic metal cleaning impoundment will be relocated to draw suction from the diked region of the closed demineralizer impoundment. After closure, the mixing impoundment will be used to hold stormwater from non-oily floor drain sources and the sludge drying beds prior to NPDES discharge.

After the clay liners of the demineralizer and mixing impoundments have been neutralized, if required, and sampling verifies that the clay liners contain no hazardous constituents, four (4) core samples will be taken in each to a depth of approximately six (6) feet using a lightweight drilling rig.

These cores will be used for geotechnical testing of the liner soils. The tests will verify that the recompacted clay liner meets the guidelines for a Class II surface impoundment (TDWR Technical Guideline No. 4), as given in Table 4. The

TABLE 4

# Class II Impoundment Liner Characteristics

<u>Parameter</u>	Limit	
In-place soil thickness of	<u>≥</u> 3'	
Compacted soil liner thickness	<u>≥</u> 2 '	
Permeability	<1 x 10 <sup>-7</sup> cm/sec	
% Passing No. 200 Sieve	<u>≥</u> 30	
Liquid Limit	<u>≥</u> 30	
Plasticity Index	>15	

permeability tests will be conducted with filter backwash water for the demineralizer impoundment cores and stormwater for the mixing impoundment cores.

Each bore hole will be grouted to the surface with a cement-bentonite grout to prevent contamination **A11** equipment underlying soils. drilling will be decontaminated between boring locations and all sampling equipment decontaminated between sampling points.

# 5.0 GROUNDWATER MONITORING

A "Groundwater Quality Assessment Plan, P.H. Robinson Generating Station, Implementation Report" was submitted to Mr. Paul Lewis of TDWR in May, 1984. According to this report it is impossible to determine whether the surface impoundments at the P.H. Robinson Generating Facility are seeping fluids into the subsurface because of the locations of the monitor wells with respect to the cooling water intake canal. Monitor Well Nos. 2 and 4 are yielding groundwater with moderate chloride concentrations, unlike the low wastewater in the surface impoundments immediately adjacent to them. This indicates that seepage, if any, from the surface impoundments is not significant. Monitor Well No. 3, which has an elevated chloride level, is immediately adjacent to the generally brackish intake canal. Monitor Well No. problems related to well completion that were at least

- 21 -

partially mitigated by extended well jetting during this investigation. Use of the Student's t-test for Monitor Well Nos. 2, 3, and 4 will continue to indicate statistically significant differences between upgradient and downgradient wells because saltwater is entering the shallow aguifer sand.

Subsequent to the agreement with Mr. Lewis, semiannual groundwater monitoring was resumed with sampling on October 9, There were positive "t" values for both pH and conductivity for all four monitor wells when utilizing the Cochrans Approximation (C/A) to the Behrens-Fisher Student's t-test. At the direction of the TDWR, the CMA False-Positive test was applied. The test indicated no signficant differences between the up-gradient well and its background data; Monitor Wells 2, 3, and 4; and pH and conductivity values for Monitor Wells 2 and 4. The conductivity value for Monitor Well 3 reflects salt-water intrusion in the area of the well due to the cooling water intake canal. Therefore, no additional groundwater quality assessment studies are considered necessary at this time.

However, the semi-annual sampling of the indicator evaluation program will continue until closure of the impoundments. Based on the data presented in the groundwater quality assessment study report and HL&P's intent to close the

impoundments in accordance with 31 TAC 335.469 (a)(1), Mr. Lewis verified that post-closure groundwater monitoring will not be required at this facility. The monitoring wells will, however, be maintained in a functional condition.

#### 6.0 NOTIFICATION

The following notifications will be made to Mr. Merton Coloton, Supervisor, TDWR, District 7, ten (10) days prior to commencement of closure activities:

- A. The date closure will begin for each impoundment; and
- B. The date semi-annual groundwater sampling will be conducted.

This information will be provided in the event that observation and sampling coordination are desired by District 7 personnel.

#### 7.0 CERTIFICATION

Sampling and closure certification of the impoundments will be conducted by an independent consulting firm. A registered professional engineer will certify that the impoundments have been closed in accordance with the specifications in the approved closure plan. This written certification will be submitted to TDWR.

# ATTACHMENT I

Typical Discharges to Each Impoundment

### DEMINERALIZER REGENERANT SURFACE IMPOUNDMENT

Waste Stream

Constituents

Approx. Annual 1984 Volume (Gallons) \*

Laboratory &

126,962,000

Sample Drains\*\*

Demineralizer

2-4%  $H_2SO_4$  and/or

Regenerant

6-8% NaOH regeneration

rinses. Rainwater

Varying amounts of the following: Calcium Sulfate Chloride Iron

Silica Magnesium Sodium Copper

Demineralizer floor drains

H<sub>2</sub>SO<sub>4</sub> NaOH

Unknown, varies with rainfall and

Rainwater

any spillage

Entire contents of this impoundment are routed to the mixing impoundment prior to discharge under NPDES permit.

\*\*See "P.H. Robinson Laboratory Waste Stream" for details.

# DEMINERALIZER REGENERANT/NON-OILY FLOOR DRAIN

# MIXING SURFACE IMPOUNDMENT

Waste Stream

Constituents

Approx. Annual 1984

Volume (Gallons)

Demineralizer Regenerant Impoundment

126,962,000\*

Recycle from

NaOH

Chemical Waste Betz 1125L Polymer Treatment

(carboxylated emulsion System and polyacrylamide) @ 1.5 Concrete Area ppm in the recycle

Drains

Sludge Bed Drainage

Non Oil Bearing Rainwater Floor Drains

Superclean 10

Duopower (non-ionic surfactant detergent for floor cleaning)

Unknown, varies with rainfall

\* Total quantity discharged from this impoundment under NPDES permit. Represents a total for all waste streams listed.

#### INORGANIC METAL CLEANING SURFACE IMPOUNDMENT

Approx. Annual 1984 Waste Stream Constituents Volume (Gallons) Backwash Water Betz 1192 Polymer 3,600,000\* from upflow (aqueous solution of 1,188 lbs. filters for recycling to polyquaternary ammonium salt) @ 0.5 ppm auxiliary purchased surface water cooling towers Lube Oil Cooler Inhibited HCl @ 10% 0\*\* Cleaning solution Rodene #213\*\*\*\* (Inhibiting Agent) Soda Ash 0\*\*\* Feedwater Vertan (EDTA) Heater 0 5% Solution Cleaning

- Total quantity recycled based on number of regenerations.
- \*\* Last lube oil cleaning in 1982 generated approximately
  3,000
  gallons.
- \*\*\* Last feedwater heater cleaning in 1982 generated approximately 5,000 gallons.
- \*\*\*\* Contains complex substituted keto-amines, isopropanol, propargyl alcohol, triphenyl sulfonium chloride, and formaldehyde.

- Pits

# Laboratory Waste Stream

Analysis	Reagents	Volume/Year (mls.)
Free Available Chlorine	7.0 pH Buffer .00564 N. Phenylarsine Oxide	500 500
Silica l	Silica l (1) (Hach Chem.) Citric Acid Amino Reducing Agent (2)	2,500 2,500 grams 2,500 grams
	Cu Ver 1 (3) (Hach Chem.) Sodium Potassium Tartrate Bchod (50% Methanol)	800 grams 1,700 4,000
Copper	1:1 NH <sub>4</sub> OH 10% Ammonium Citrate Bromine Water 1:1 HCl	18,000 1,000 300 4,000
Iron TPTZ Method	TPTZ (4) Sodium Acetate Crystals 1:1 HCl 10% Hydroxylamine Hydrochloride	25 grams 2,000 grams 6,800
Colloidal Silica	Hydrofluoric Acid, 48% Boric Acid, 5% Ammonium Molybdate, 10% H <sub>2</sub> SO <sub>4</sub> - 10N Amino Reducing Agent	1,300 130,000 10,500 52,00 2,600
Water Discharge	Consisting of: Dish Washing; Bottled EPA Outfall Samples; Storage Upflow Filter Samples; Tank, Boiler and Cooling Silica-Makeup Samples; Tower Samples; Demineralized Water for Rinsing.	
Continuous Sample Discharge	Flows From: Economizer Inlet, Boiler Feed Booster Pump, Condensate Pump, Deaereator Discharge, Economizer, Condensate Pump Discharge, Condensate Downstream Polishe Conviction Pass, Drip Pump Discharge	1.2 Million Gallons r,

# Laboratory Waste Stream

Analysis		Reagents		Volume/Year (mls.)
Total Hardness		Hardness Buffer Reagent (13) Hardness Indicator (14) EDTA Standard Solution (12)		500 grams 100 grams 10,500
Total Residual Chlorine		Acetate Buffer, 4 pH Potassium Iodide, 5% .00564 N. Phenylarsine Oxide		1,500 1,500 6,000
(1)	Silica 1:		Ammonium Molybdate Acid	and Sulfuric
(2)	Amino Reducing	Agent:	1-Amino-2-Napthol- Acid in Sodium Sul Sodium Meta-Bisulf	fite and
(3)	Cu Ver 1:		2,2'-Biquinoline-4 carboxylic Acid (B. Acid)	
(4)	TPTZ		2,4,6 - Tripyridl- Dissolved in Severa HCl, then Brought with DI.	al Drops 1:1
(5)	Phos Ver 3:		Ascorbic Acid	
(6)	Indigo Carmine	Indicator:	5,5'-Indigodisulfor	nic Acid
(7)	Erlich's Reage	nt:	p-Dimethylamino-Ber in Concentrated Hyd Acid and Absolute I	drochloric
(8)	Phenolphthalei	n:	Dissolved in Ethano	ol.
(9)	Methyl Red Ind	icator:	Dissolved in Water	•
(10)	Methyl Orange	Indicator:	Dissolved in Water	•
(11)	Calcium Indica	tor:	1-(1-Hydroxyl-4-Metazo)-2-Napthol-4-St	

(12) EDTA Standard Solution:

Ethylenediamine tetraacetic Acid, Disodium Salt

(13) Hardness Buffer:

Sodium Sulfide

(14) Hardness Indicator:

1-(1-Hydroxy-2-Naphthylazo)-6-Nitro-2-Naphthol-4-Sulfonic Acid

# The Light company

Company Houston Lighting & Power P.O. Box 1700 Houston. Texas 77001 (713) 228-9211

February 11, 1985

Mr. Ray Henry Austin, Head Storage and Processing Facilities Unit Solid Waste Section Texas Department of Water Resources P.O. Box 13087, Capitol Station Austin, Texas 78711

Dear Mr. Austin:

SUBJECT: REVISED PART A APPLICATION

P. H. ROBINSON GENERATING STATION - TDWR No. 31638

The August 1980 Part A application for Houston Lighting & Power Company's P. H. Robinson Generating Station has been updated. The attached revisions reflect current hazardous waste management practices at this facility.

Please call R. D. Groover at (713) 922-2195 if you have any questions concerning these revisions.

Sincerely,

W. Fx McGuire, Manager

Environmental Protection Department

BAD/pm/L3

Attachments

cc: M. J. Coloton, TDWR District 7

#### REVISED PART A APPLICATION P.H. ROBINSON GENERATING STATION

Appropriate tables/pages (attached) of the Part A application have been revised to reflect current hazardous waste management practices at P.H. Robinson Generating Station. The Part A application prepared in August, 1980 listed several wastes/facility components which have been removed in the revised Part A. These waste/components are discussed below:

1. Demineralizer Regenerant Inorganic Sludge

This sludge accumulates at the bottom of the demineralizer regenerant retention pond. Based on EP Toxicity analyses submitted to your office on April 8, 1981 (letter attached), this waste has been declassified to a Class II Waste (TWC 241210).

2. Metal Cleaning Organic Acids/Metal Cleaning Organic Acids Collection Pond

This waste is generated from ammoniated citric acid or hydroxyaceticformic acid boiler and equipment cleanings. The waste is stored in an impoundment prior to being incinerated in an energy-producing boiler. Based on EP Toxicity analyses submitted to your office on April 8, 1981 (letter attached), this waste has been declassified to a Class II waste (TWC 215290).

3. Metal Cleaning Organic Sludge/Oil Ash Wash Sludge

This sludge accumulates at the bottom of the organic impoundment. Based on EP Toxicity analyses submitted to your office on April 8, 1981 (letter attached). This waste has been declassified to a Class II waste TWC 248990).

4. Chemical Waste Treatment System Sludge

141470

A concrete chemical waste treatment system is used to treat inorganic cleaning wastes and demineralizer regenerant prior to NPDES discharge. The sludge which accumulates in the settling basin of the treatment system is periodically removed for offsite disposal. The attached EP Toxicity analyses of chemical waste treatment system sludge indicate that no hazardous constituents are present.

5. Waste Oil and Sludge/Waste Oil and Sludge Collection Facility

Oil and sludge generated from the oily waste treatment system is classified as a Class I nonhazardous or Class II waste, depending on the amount of oil present in the sludge. The attached EP Toxicity analyses of oily sludge indicate that no hazardous constituents are present.

6. Asbestos in Insulation

Insulation containing asbestos is classified as a Class I nonhazardous waste (TWC 170750). Asbestos, originally listed on the Part A application has been delisted from the hazardous waste list (CFR 40.261).

## 7. Metal Cleaning and Other Inorganic Sludge

This sludge accumulates at the bottom of the inorganic impoundment from storage of hydrochloric acid equipment cleanings. Based on EP Toxicity analyses submitted to your office on April 8, 1981 (letter attached). This waste has been declassified to a Class II waste (TWC 241210).

#### Table III-I Hazardous Wastes and Management Activities

Estimated 1984 Waste Management Activities Annual SIC **TDWR** TOWR **EPA** (Check applicable items) Verbal **EPA** Quantity Code On-Site Waste Code Off-Site Description Sequence Hazard Hazardous Generated and of Waste Number Number Waste No. Processino<sup>2</sup> (lbs) Code Disposal Storage ' Disposal **Process** 007 902570 Demineralizer Acid and 1.1X10<sup>9(a)</sup> Water Base Regeneration D002 X X 008 902560 C Treatment Wastewater organic Metal Boiler an Condenser Cleaning (b) 4911 0 D002 X 010 903070 С Leaning Waste 0 4911- Degreasin D001 005 910100 I X Spent Solvents F003 0 4911- Painting I,T F005 X 006 910110 Paint Thinner  $1.3x10^{6}$ 4911- Painting **D008** X X 973280 018 Sandblasting Grit (a) Total quantity discharged from demineralizer impoundment under NPDES permit. (b) Inorganic metal cleaning waste is generated infrequently. Quantity generated in 1982 was approximately 2.5X104 lbs.

<sup>1 &</sup>quot;Storage" means the holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, or stored elsewhere.

<sup>2 &</sup>quot;Processing" means the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including to treatment or neutralization of hazardous waste, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to recover energy or material from the waste or so as to render such waste non-hazardous or less hazardous; safer for transport, store or dispose of; or amenable for recover alternable for storage, or reduced in volume. The "transfer" of solid waste for reuse or disposal as used above, does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the Executive Director determines that regulation of such activity is necessary to protect human health or the environmental definition of "processing" does not include activities relating to those materials exempted by the Administrator of the EPA pursuant to the federal Solid Waste Disposal Act, amended by the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seg., as amended.

Verbal Description of Waste	Spent Solver	nts		
Process (see last column in Table	HI-1) 4911	- Degreas	sing	
TDWR Sequence Number of Was	te (if assigned)	005		
Indicate the facility components unumber of such facility componer		·	•	vaste by entering the
Lagoon/Pond (unlined)			Landfarm	
Lagoon/Pond (lined)			Landspreading Area	
Basin (earthen, above-grade	lined)		Spray Irrigation Area	
Basin (earthen, above-grade	unlined)		Flood Irrigation Area	
Basin (earthen, below-grade	lined)		Septic Tank/Drain Field	
Basin (earthen, below-grade	unlined)		Injection Well	
Basin (concrete, above-grad	e lined)		Tank (surface storage)	
Basin (concrete, above-grad	e unlined)		Tank (sub-surface storage)	
Basin (concrete, below-grad	le lined)		Tank (surface processing)	
Basin (concrete, below-grad	le unlined)		Tank (sub-surface processing)	
Basin (other)			Tank (other)	
Pit (lined)		_1_	Drum Storage Area	
Pit (unlined)			Other Container Storage Area	•
Incinerator			Other Container Storage Area	
Open Controlled Incineratio	n Area		Other Container Storage Area (s	specify type of
			of container	
1 Boiler (energy-producing)		<del></del>	)	
Landfill (sanitary)			. Waste Pile Storage Area	
Landfill (surface, open)		1	Other (specify <u>Mixed with</u>	waste oil
Landfill (other)			r pickup by a waste ) 1 recycling firm	

Verbai Description of Waste Paint lilliner	
Process (see last column in Table III-1) 4911 - 1	Painting
TDWR Sequence Number of Waste (if assigned) 0	06
Indicate the facility components used for storage/proc number of such facility components by which this was	essing/disposal of the above-specified waste by entering the ste is managed.
Lagoon/Pond (unlined)	Landfarm
Lagoon/Pond (lined)	Landspreading Area
Basin (earthen, above-grade lined)	Spray Irrigation Area
Basin (earthen, above-grade unlined)	Flood Irrigation Area
Basin (earthen, below-grade lined)	Septic Tank/Drain Field
Basin (earthen, below-grade unlined)	Injection Well
Basin (concrete, above-grade lined)	Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Basin (other)	Tank (other)
Pit (lined)	Drum Storage Area
Pit (unlined)	Other Container Storage Area
Incinerator	Other Container Storage Area
Open Controlled Incineration Area	Other Container Storage Area (specify type of
	of container
Boiler (energy-producing)	)
Landfill (sanitary)	Waste Pile Storage Area
Landfill (surface, open)	Other (specify
Landfill (other)	

Verbal Description of Waste Demineralizer Ac	id and Base Regeneration Wastewater
Process (see last column in Table III-1) 4911 - Wat	er Treatment
TDWR Sequence Number of Waste (if assigned) 007	,008
Indicate the facility components used for storage/process number of such facility components by which this waste	ssing/disposal of the above-specified waste by entering the is managed.
Lagoon/Pond (unlined)	Landfarm
_2_ Lagoon/Pond (lined)	Landspreading Area
Basin (earthen, above-grade lined)	Spray Irrigation Area
Basin (earthen, above-grade unlined)	Flood Irrigation Area
Basin (earthen, below-grade lined)	Septic Tank/Drain Field
Basin (earthen, below-grade unlined)	Injection Well
Basin (concrete, above-grade lined)	Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Basin (other)	Tank (other)
Pit (lined)	Drum Storage Area
Pit (unlined)	Other Container Storage Area
Incinerator	Other Container Storage Area
Open Controlled Incineration Area	Other Container Storage Area (specify type of
	of container
Boiler (energy-producing)	
Landfill (sanitary)	Waste Pile Storage Area
Landfill (surface, open)	Other (specify
Landfill (other)	)

TOWD.0227 Day 0.1

. 1.

Verbal Description of Waste Inorganic Meta.	Cleaning Wastes
Process (see last column in Table III-1) 4911 - 1	Boiler and Condenser Cleaning
TDWR Sequence Number of Waste (if assigned)	010
Indicate the facility components used for storage/proc number of such facility components by which this was	essing/disposal of the above-specified waste by entering the is managed.
Lagoon/Pond (unlined)	Landfarm
*1_ Lagoon/Pond (lined)	Landspreading Area
Basin (earthen, above-grade lined)	Spray Irrigation Area
Basin (earthen, above-grade unlined)	Flood Irrigation Area
Basin (earthen, below-grade lined)	Septic Tank/Drain Field
Basin (earthen, below-grade unlined)	Injection Well
Basin (concrete, above-grade lined)	Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Basin (other)	Tank (other)
Pit (lined)	Drum Storage Area
Pit (unlined)	Other Container Storage Area
Incinerator	Other Container Storage Area
Open Controlled Incineration Area	Other Container Storage Area (specify type of
	of container
Boiler (energy-producing)	
Landfill (sanitary)	Waste Pile Storage Area
Landfill (surface, open)	1 Other (specify Transported Offsite
Landfill (other)	for disposal

\*Last used on April 16, 1982. Quantity generated was approximately 3000 gallons.

Verbal Description of Waste Sandblasting	Grit
Process (see last column in Table III-1) 4911 -	Painting
TDWR Sequence Number of Waste (if assigned)	018
Indicate the facility components used for storage/pronumber of such facility components by which this w	ocessing/disposal of the above-specified waste by entering the aste is managed.
Lagoon/Pond (unlined)	Landfarm
Lagoon/Pond (lined)	Landspreading Area
Basin (earthen, above-grade lined)	Spray Irrigation Area
Basin (earthen, above-grade unlined)	Flood Irrigation Area
Basin (earthen, below-grade lined)	Septic Tank/Drain Field
Basin (earthen, below-grade unlined)	Injection Well
Basin (concrete, above-grade lined)	Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Basin (other)	Tank (other)
Pit (lined)	Drum Storage Area
Pit (unlined)	Other Container Storage Area
Incinerator	Other Container Storage Area
Open Controlled Incineration Area	Other Container Storage Area (specify type of
	of container covered bins
Boiler (energy-producing)	)
Landfill (sanitary)	Waste Pile Storage Area
Landfill (surface, open)	Other (specify

\_\_ Landfill (other)

#### Process Description for Hazardous Waste Streams

### 1. Demineralizer Acid and Base Regenerant Wastewater (EPA Hazard Code C)

Demineralizer regenerant waste is collected in the Acid Retention impoundment. The waste is then pumped to a mixing impoundment prior to going to the chemical waste treatment system for pH adjustment and suspended solids removal. Treated wastewater is discharged in accordance with the NPDES permit.

### 2. Inorganic Metal Cleaning Waste (EPA Hazard Code C)

Inorganic metal cleaning waste is collected in the inorganic impoundment. The waste is then pumped to the chemical waste treatment system for pH adjustment, suspended solids and metals removal. Treated wastewater is discharged in accordance with the NPDES permit. This impoundment last received inorganic metal cleaning waste on April 16, 1982 (approximately 3000 gallons). Inorganic metal cleaning waste generated since 1982 is transported off-site for disposal.

### 3. Spent Solvents (EPA Hazard Code I)

Spent solvents are collected in drums and mixed with waste oil for recycling, or incinerated in an energy-producing boiler.

### 4. Paint Thinner (EPA Hazard Code I, T)

Waste paint thinner is collected in drums for temporary storage prior to off-site disposal.

### 5. Sandblasting Grit (EPA Hazard Code E)

Waste blasting material is collected in covered bins for temporary storage prior to off-site disposal.

P.O. BOX 20807 HOUSTON, TX 77025 P.O. BOX 52768 LAFAYETTE, LA 70505 P.O. BOX 10276 JEFFERSON, LA 7018\*\* P.O. BOX 378 ACME, MI 49610

Certificate Number 045711 Invoice Number 123528 April 01, 1982

(Waste Oil and Sludge/

Houston Lighting & Power Company Energy Development Complex Room C 275 P.O. Box 1700 Houston, Texas 77001

Attention: Mr. R. T. Bye

Sample Description: PHR

sludge tank tricellerator

Date Sampled: 03/03/82 Waste Oil and Sludge Collection

Date Received: 03/18/82 Facility)

·		Date	Time	Analyst
Trichlorophenoxypropionic	< 1.0	mg/l 03/31/82	8:00 am	JM
Dichlorophenoxyacetic	< 1.0	mg/1 03/31/82	8:00 am	JM
Silver total EPA storet number 01077	< 0.05	mg/1 03/24/82	3:00 pm	KES
Arsenic total EPA storet number 01002	< 0.05	<u>mg/l</u> 03/26/82	8:00 am	KES
Barium total EPA storet number 01007	< 0.1	mg/1 03/25/82	3:00 pm	KES
Cadmium total EPA storet number 01027	< 0.05	mg/l 03/24/82	3:00 pm	KES
Corrosivity	< 1	mmpy 03/19/82	4:00 pm	DD
Chromium total EPA storet number 01034	< 0.05	mg/1 03/24/82	11:30 am	KES
Endrin	< 0.02	mg/l 03/31/82	8:00 am	JM
Flash Point	> 210	<u>degF</u> 03/29/82	1:00 pm	SRG
Mercury total EPA storet number 71900	< 0.005	<u>mg/1</u> 03/25/82	1:00 pm	KES
Lindane	< 0.4	mg/1 03/31/82	8:00 am	JM



P.O. BOX 20807 HOUSTON, TX 77025 P.O. BOX 52768 LAFAYETTE, LA 70505 P.O. BOX 10276 JEFFERSON, LA 70181 P.O. BOX 378 ACME, MI 49610

Certificate Number 045711, page 2 Houston Lighting & Power Company

Methoxychlor	< 1	mg/l 03/31/82	8:00 am	JDM
Lead total EPA storet number 01051	< 0.1	mg/1 03/24/82	10:00 am	KES
Selenium total EPA storet number 01147	< 0.05	mg/1 03/24/82	10:00 am	KES
Toxaphene	< 0.5	mg/1 03/31/82	8:00 am	JM

Quality Assurance: These analyses are performed in accordance with EPA quidelines for quality assurance. These procedures include the following as a minimum requirement: comparisons against known standards in each run, one in ten sample splits, and a quarterly method review against known spike samples.

Southern Petroleum Laboratories, INC.

SPL-103-5 PT

### Table III-4 Hazardous Waste Facility Components List

Facility Component		S	Status Design Capacity				Status			Design Capacity			Date
Nama	TDWR Seq. No.	Inactive	Active	Proposed	(au uda)	(gal)	(lbs)	Years Utilized	in Service				
Name	38q. NO.	Inactive	ACTIVE	Proposed	(cu yds)	(gai)	/insi		3014100				
Lagoon/Pond (lined)	01		X			_500,000		18 .	1966				
Verbal Description: <u>clay lined</u>	nand for th	e collecti	on and eau	ualization d	of demineral	lizer recener:	ation wast	۵					
•	•					•	LION WASE						
prior to treatment.	<del></del>			<del> </del>									
Lagoon/Pond(lined)			X	·-··	<del></del>	200,000		7	1978				
Verbal Description: <u>clay lined</u>	pond for th	e ccllecti	on of meta	1 cleaning	inorganic v	vaste from bo	ller and c	ondenser					
cleanings. Last used on	Anwil 16 1	082			_								
creatings. Last used on	APELL 10. I	204											
Boiler/Energy Producing	03		X			NA		NA	<u> NV</u>				
Verbal Description: <u>Boiler for</u>	incineratio	n of spent	solvents	mixed with	waste oil,								
Drum Storage Area													
(enclosed)	04		X	<del></del>	<del></del>	NA		4	1980				
Verbal Description: <u>Drum stor</u>	age area for	the colle	ction of s	pent solver	nts and wast	e paint thin	ner						
prior to offsite disposa	1.												
								_					
Lagoon/Pond (lined)	06		<u>X</u>	<del></del>		60,000		7	1978				
Verbal Description: <u>clay line</u>	d pond for t	<u>he collect</u>	ion and eq	ualization	of deminera	lizer regener	ration was	te					
prior to treatment.													
Other Container Storage	Aras		Y		NA			NA	NA				
								- NA					
Verbal Description: Covered	bins for sto	rage of sa	ndblasting	grit prior	to offsite	disposal.							

Certificate Number 050543 Invoice Number 132105 October 13, 1982

Houston Lighting & Power Company Energy Development Complex Room C 275 P.O. Box 1700 Houston, Texas 77001

Attention: Mr. Doug Chin

Sample Description: P. H. Robinson

CWTS Sludge

09/03/82

Date Sampled: Date Received:

09/07/82

						Date	Time		Analyst
	Trichlorophenoxypropionic		<	0.01	<u>mg/l</u>	09/22/82	3:00	pm	RB
_	dichlorophenoxyacetic		<	0.1	<u>mg/1</u>	09/22/82	3:00	pm	RB
	Silver total EPA storet number 01077		<	0.05	<u>mg/l</u>	09/13/82	3:00	pm	DDP
	Arsenic total EPA storet number 01002		<	0.05	<u>mg/1</u>	09/29/82	10:00	am	JDM
	Barium total EPA storet number 01007			1.6	<u>mg/1</u>	09/17/82	2:00	pm	SLB
	Cadmium total EPA storet number 01027		<	0.02	mg/l	09/17/82	4:00	рm	DDP
	Chromium total EPA storet number 01034		<	0.05	mg/l	09/22/82	10:00	am	SLB
	Endrin		<	0.0002	mg/1	09/22/82	2:00	Ρm	RB
	Flash Point	>	20	00	degF	09/30/82	2:00	pm	JDM
	Mercury total EPA storet number 71900		<	0.005	<u>mg/l</u>	09/15/82	4:00	pm	SLB
	Lindane		<	0.004	mg/1	09/22/82	3:00	pm	RB
_	Methoxychlor		<	0.1	mg/l	09/22/82	3:00	pm	RB

Certificate Number 050543, page 2 Houston Lighting & Power Company

Lead total EPA storet number 01051	< 0.1	<u>mg/1</u> 09/22/82	10:00 am	SLB
Selenium total EPA storet number 01147	< 0.02	<u>mg/1</u> 09/13/82	3:00 pm	SLB
Toxaphene	< 0.005	mg/1 09/22/82	3:00 pm	RB

Quality Assurance: These analyses are performed in accordance with EPA quidelines for quality assurance. These procedures include the following as a minimum requirement: comparisons against known standards in each run, one in ten sample splits, and a quarterly method review against known spike samples.

SOUTHERN PETROLEUM, LABORATORIES, INC.

Sammy Russo

10000 837401

# Texas Department of Water Resources

# INTEROFFICE MEMORANDUM

то :	S. W. Registration # $3638$ PAP Application # $10497$	
FROM :	RCRA Forms Consolidation Team  Company: HL&P Site: Robinson Sta	
Attached h	erewith please find the following document(s):	
	EPA 8700-12	
V	EPA 3510	
	TDWR Part A	
	Other:	

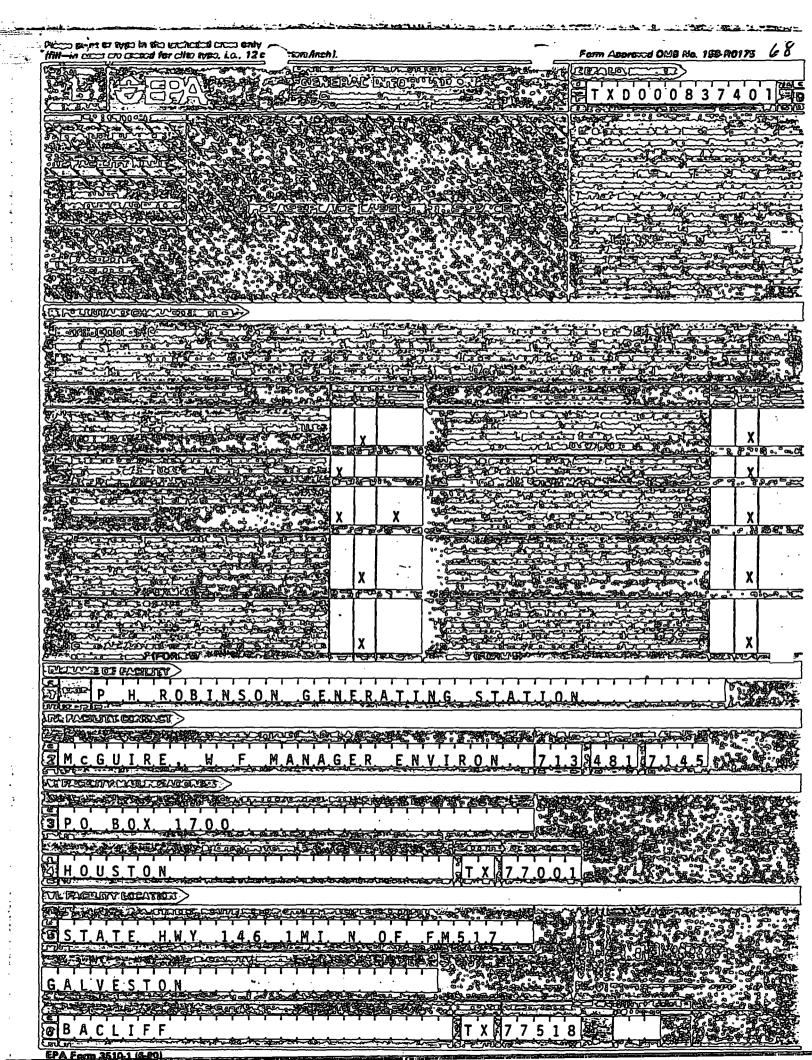
These documents are being placed in this file until processing at a later date.

Confidential material associated with these documents ( $\underline{\underline{M}}$ (IS NOT) being held in the solid waste section for review.

MAR 18 1982 CA-TUNA

## HAZARDOUS WASTE ADMINISTRATIVE CHECK LIST

1.	Active Corporation	Yes ( )	No ( )	
2.	Postage Fee Present	Yes (V)	No ( )	
3.	Signature Page (Original) Signed by Appropriate Person	Yes ( 🖍)	No ( )	
4.	Signature Page Notarized	Yes ( V)	No ( )	
5.	Acceptable List of Landowners and Their Addresses	Yes ( 1/)	No ( )	
6.	Acceptable Map of Landowner Locations	Yes (V)	No ( )	
7.	Mandatory Attachments Identified on Page 16	Yes ( )	No ( )	
	a. USGS Map	Yes ()	No ( )	
	b. Site Legal Description	Yes (4)	No ( )	
	c. Hazardous Waste Facility Component Summary Sheet	Yes ( V)	No ( )	
	d. Facility Boundaries and Adjacent Waters Map	Yes ( )	No ( )	
	e. Photographs	Yes ( 1/)	No ( )	
	f. Process Flow Diagram/Description	Yes (V)	No ( )	
	g. Copy of Lease if Site is not //// Owned by Applicant	Yes ( )	No ( )	
200	Howater Lighting & Power Dower Holinsen Status	(Ŋ,	# 1049	7
Ĵ,	V1111 V 3 3			



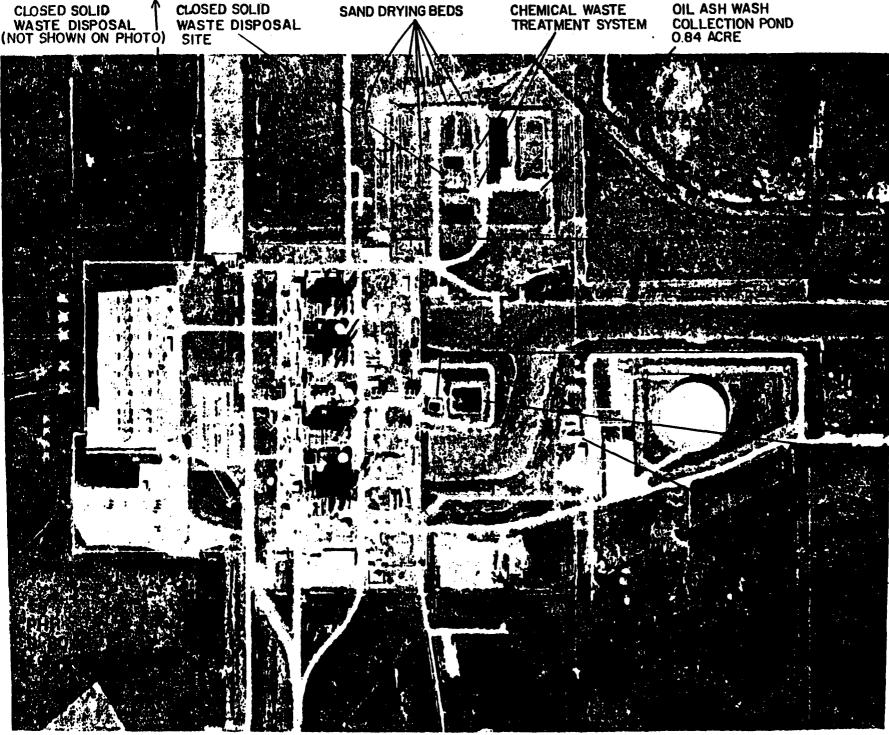
Non-min of the property and the property and the property of t	DUR.
Places prints or type in the unchested cress only / (fill—in evens are succeed for elite type, i.e., 12 c tensineh).	Form Apprecial OMB No. 188-580000
FRZARDOUS WASTE PERLIT APPLICATION	FIX DO O O 8 3 7 4 0 1 1
FOR OFFICIAL USE ONLY	niain
APPROVIDE TO MA A A A A A A A A A A A A A A A A A A	
IL FIRST OR REVISED APPLICATION	
Picco on "X" in the appression bearing on B below book one-box only to indicae whether this is the first revised application. If this is your first application and you climately bearing the properties of the properties are the properties of the p	Constitution products culturalized for the product of the constitution of the constitu
EPA I.D. Number in Num I classo.	
A. PIRST APPLICATION ( The blood past) should be the first of the firs	
8 6 6 0 6 0 1 feet and benoties and left.	TO THE WAS CARREST OF THE PARTY
B. REVISED APPLICATION (2000 CA. 2. Sales Commence Commen	DATASIAN MATACANA RETINA
HI. PROCESSES — CODES AND DESIGN CAPACITIES	
A. PROCESS CODE — Enter the east from the like of present and a little when the consideration of the consideration of the consideration. If a present will be used over the consideration of the consi	* CENTRAL CONTROL OF STATES OF STATES OF STATES
E PROCESS DEEGN CUMENTY - For the process of the party of the process of the party of the process of the party of the part	
1. AMOUNT — Enter the character of the control of t	anny land he for the form of the first of th
DIFO STAFFAGRICAE CHITE CONTROL OF THE CONTROL OF T	A CONTROL AND THE TRANSPORT OF THE PROPERTY OF
	PODE TO DESIGN CORNESSOR
TARTER THE PROPERTY OF THE PRO	
The service of the se	
EMIGNION TRUE TO LEGICATION CONTROL CO	
TRUDDOCT INCOMINATOR STATE OF THE PROPERTY OF	
UNIT OF MEASURE CODE SURE CODE	A TANPOS L'ELEURES
CHOIC VARDO	
CUDIC METURE: CONTROL OF THE CONTROL OF T	
CPRS CARRY C	THE OFFICE ALL
Second Cooks (New York of the Cooks of the C	CONT.
X-15 0 2 5 600 5 5 5 5 0 4 85	0,000 G
X-2 T 0 3 T 0 4 same a	s above
	3,000 G
	0,000 G
3	
1 S 0 4 200,000 F G F T 0 2	9,600

Continued from page 2. Form Approved OMB No. 158-S80004 NOTE: Photocopy this page before completing n you have more than 26 wester to list. A PROPERTY. HAZARD.
ZO WASTENO
LZ (enter code) PROCESSES E ESTRATED ANNUAL QUANTITY OF WASTE P 🔯 S 0 4 T 0 1 000012 1.013 x 10<sup>9</sup> Unknown, small 2 DIO 0 0 网S 0 4 amount 3 00002 4,000 S 0 4 T 0 2 plololo 20,400,000 S 0 4 T 0 4 5 р plolola 8,000 6 ploioiz 140,000 02 7 02 Listed to be compatible with 7. plololo T 0 1 S 0 2 47,250 state requirements. 8 Į, F101013 P 8,400 0 1 F[0]0|5|included with above Listed to be compatible with HIOIT 600 0 1 state requirements 1.1 ıż 13 14 15 16 17 18 79 20 21 22 23 24 25 26

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE





METAL
CLEANING
ORGANIC
ACIDS
COLLECTION
POND
0.36 ACRE

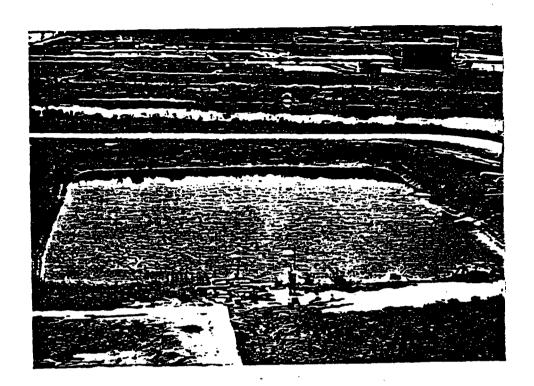
METAL
CLEANING
ORGANIC
ACIDS
COLLECTION
POND
0.13 ACRE

DEMINERALIZER
REGENERANT
COLLECTION
POND
0.43 ACRE

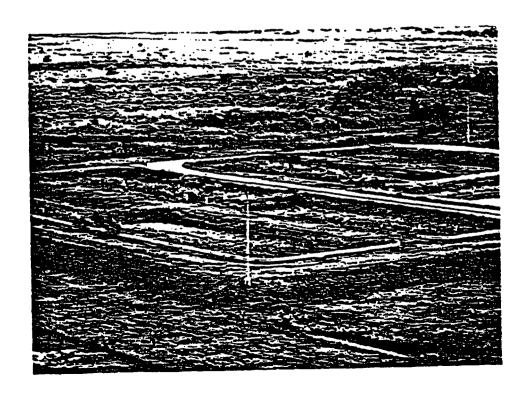
WASTE OIL & SLUDGE FACILITY

I"= 400'

(....

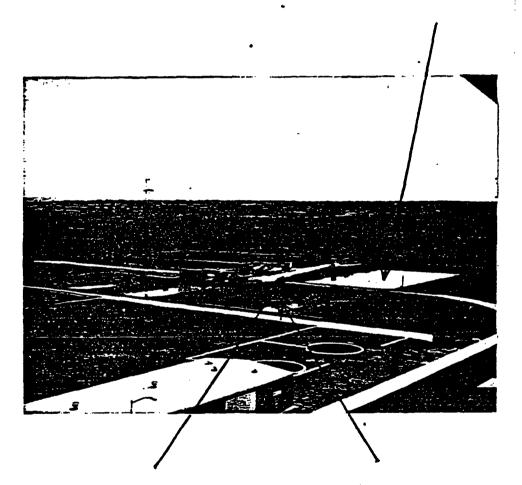


DEMINERALIZER REGENERANT COLLECTION POND



SAND DRYING BEDS

OIL ASH WASH COLLECTION POND

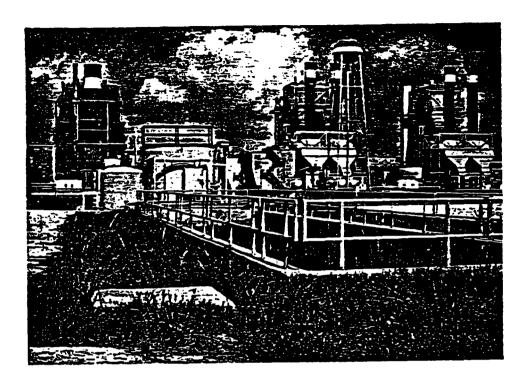


CHEMICAL WASTE TREATMENT SYSTEM

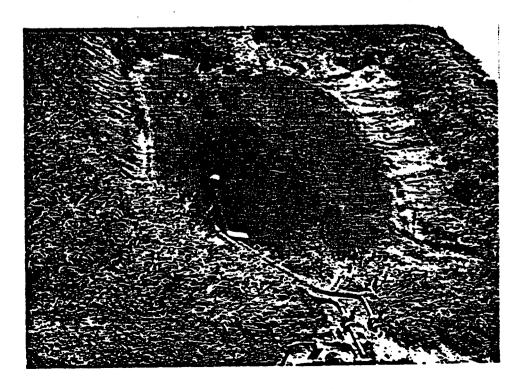
METAL CLEANING ORGANIC ACIDS COLLECTION POND

# P. H. ROBINSON GENERATING STATION

(1222



WASTE OIL & SLUDGE COLLECTION FACILITY



METAL CLEANING INORGANIC ACIDS COLLECTION POND



### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

# REGION VI

1201 ELM STREET DALLAS, TEXAS 75270 CH 10497

July 21, 1981

Houdton Lght & PwrP.H. Robinson Generating Station

Attn: W.F. McGuire

P.O. Box 1700

Houston, Texas 77001

EPA ID NUMBER: TXD 00 083 7401

FACILITY LOCATION:

State Hwy 146 1 mi North of FM 517

Bacliff, Texas

This is to acknowledge that the Environmental Protection Agency has completed processing the information submitted in your Part A Hazardous Waste Permit Application. It is the Agency's opinion, based on the assumption that the information submitted is complete and accurate, you as an owner or operator of a hazardous waste management facility have met the requirements of Section 3005(e) of the Resource Conservation and Recovery Act (RCRA) for Interim Status. EPA has not verified the information submitted. If it is determined that the infor- = mation is incomplete or inaccurate, you may be asked to provide additional information or in certain circumstances it may be determined that you do not qualify for interim status. In addition, this notice does not preclude a citizen from taking legal action under the provisions of Section 7002 of RCRA.

A facility not meeting the requirements for interim status under Section 3005 of RCRA may be required to close until such time as a hazardous waste permit is issued. Interim status may also be terminated, according to procedures in 40 CFR Part 124, if the owner or operator fails to furnish additional information which EPA requests in order to process a permit application.

As an owner or operator of a hazardous waste management facility, you are required to comply with the interim status standards as prescribed in 40 CFR Parts 122 and 265 or with State rules and regulations in those States which have been authorized under Section 3006 of RCRA. In addition, you are reminded that operating under interim status does not relieve you from the need to comply with all applicable State and local requirements.

The enclosure to this letter identifies the processes your facility may use, their design capacities and the types of waste your facility may accept during interim status. This information was obtained from the Part A Permit Application. If you wish to handle new wastes, change processes, increase the design capacity of existing processes, or change ownership or operational control of the facility, you may do so only as provided in 40 CFR Sections 122.22 and 122.23.

If you have any questions concerning this letter, please contact Dwight Corley at (214) 767-2765, or write Mail Code 6E-P, 1201 Elm Street, Dallas, Texas 75270.

Sincerely

Diana Dutton, Director Enforcement Division (6E)

cc: Texas Department of Water Resources

# CONDITIONS OF OPERATION DURING INTERIM STATUS

Date prepared: July 21, 1981

and opera Applicati environme	tor of thon. This ntally ac	is facility submitted is not a determinate	solely on the information the ed in Part A of the Hazardou ion by EPA that this facilit or treating, storing or disp	us Waste Permit ty is an
I. Facil	ity name,	location and EPA i	dentification number:	
Nam	e: _	Houston Lght & Pwr-	-P.H. Robinson Generating S	tation
Loc	ation: _	State Hwy 146 1 mi	Scurll of FM 517	
		Bacliff, Texas		
EPA	ID No: _	TXD 00 083 7401		
and there	fore the		e the owner or operator of t comply with the requirements	
Own	er's name	: Houston Lightin	ng & Power Company	_
Ope	rator's n	ame: Houston Lightin	ng & Power Company	
following up to the	processe design c	s for treating, stom apacities that are i		nly the ous waste,
	cess Code 504	Design Capacity 4,050,000.	Amount Unit of Measure Gallons	
	T <b>0</b> 1	1,008,000.	Gallons per day	
<del>-</del> .	Γ04	36,000.	Gallons per day	•
	502	3,000.	Gallons	
<del>-</del> -	Γ02	209,600.	Gallons per day	
hazardous solid was	wastes w tes exhib Waste Nu	ith the following EF iting hazardous char	tus, the facility may handle PA Hazardous Waste Numbers, racteristics with the follow	and/or
			EDA Docion VI Dollar TV	75270

EPA Region VI, Dallas, TX 75270 (214) 767-2765



# Houston Lighting & Power Company

Electric Tower P.O. Box 1700 Houston Texas 77001

September 30, 1980

Executive Director
Texas Department of Water Resources
Attention: Permit Control & Records Section
P. O. Box 13087, Capitol Station
Austin, Texas 78711

SUBJECT: ADDITIONS AND MODIFICATIONS TO TOWR

HAZARDOUS WASTE PERMIT APPLICATIONS

#### Gentlemen:

As referenced in our August 15, 1980 submittal letter accompanying our fourteen permit applications, Houston Lighting and Power Company is hereby updating those applications with the enclosed additions and modifications (seven copies each).

Where appropriate, Attachments E and F, completed page 10 and other revised pages are included for the following applications:

S. R. Bertron Generating Station
Cedar Bayou Generating Station
H. O. Clarke Generating Station
Deepwater Generating Station
Gable Street Generating Station
Greens Bayou Generating Station
W. A. Parish Generating Station
P. H. Robinson Generating Station
Webster Generating Station
T. H. Wharton Generating Station
Energy Development Complex
Underground Service Center
South Houston Facility
Houston Lighting and Power Service Area

## Houston Lighting & Power Company

Page 2

SUBJECT: ADDITONS AND MODIFICATIONS TO TOWN

HAZARDOUS WASTE PERMIT APPLICATIONS

In addition the enclosed Attachments B and C complete the Energy Development Complex application.

Please contact us if you have any questions.

Sincerely,

W. F. McGuire, Manager

Environmental Protection Department

BCN/dhj Enclosures INDUSTRIAL SOLO TUSTE STORVEEZERO ESSINGVOLSPOSVETACIDATE

TA SECTION TRUCKS OF THE

ENERAL THEORY LONG

Applicant Thouston Laghting J. Priet Lospany: 1931. Robinson Cenerat

A and vidue ! Gerporation or Other Local Enbits were !

City: Thouseon, State Texas ... Lip Coce:// Will

Advinor Lave Moen at

Lay impose paysons of them office tentral college was applyed only in a college was applyed only in a college of the college was applyed only in a college of the college was applyed only in a college of the college was applyed only in a college of the college was applyed only in a college of the college was applyed on the college of the college was applyed on the college was a 
P.D., Box 1700 Houston, Teles 277001

(713) 681-7185
TO ALL Lecturations, Victoria resident, Victoria Systematical Representations (National Representation)
Horostom Lighting (Policy College)

Pio 301 700 Pio 100 Pi

Lieu Tho And Around Sno Arakhar mal (Ing Sodries Vijets (III-16) responsible for causing any necessary public notices to be published. in Aho newspeper :

ECENNED : 101 aphone Hupber (1713) -481-7145

106333980

JEL ist the applicant's authorized agent for service. 3 R. dohnston Walker, P.O. Box 1700 e()). Monston, to place were 210 code. 7700 Telephone Number: (313) 228-9211 if same as applicant. State "same as applicant. Same as applicant. City: Zanowa wastate: Zip Code: Alephone Number: D. Ownership a. St. Pole ? TI sorpore fond 12) Partnership (3) Proprietorship 2 441 Non-profit organization Publica S Federal 421 Regional County. S15) (6) Municipal c. Other Ispecity) is facility and strasproperty owned by applicant? + Yes - WIO

f you checked "no"

Submit of on attachment a scoop of the least of use of the control of the special of the second of t

3. Identify the facility owner. If some as applicant in Part 1982 A above, place as applicant " I six arent from the facility owner is required to sign the same applicant please note that the owner is required to sign the same application on page 5.

There as applicant

Audriess: Augress of the State 
Tolephone Number:

Type of Pormit Application:

1. Wes 2. Amendment (TDWR Permit Number:

. Registration and Permit Information

Danote your TMR Sorid Waste Registration Wumber - 13 mone; stal

plant or at your location: Lamping almost at the present of the parties of the pa

Relevant Program and/or Law

Leros Solla Waste Disposal Actions to Solla 100 STRUM

D. Wastewoter disposal under the Texas

C. Underground in rection under the Texas Strume

Texas later Code

U. Isras Clean Alt Action to the Texas Construing to Solla 1000 TACK

Reclamation Action Although Action to Solla 1000 TACK

Reclamation Action Although Action to Solla 1000 TACK

Reclamation Action Although Action to Solla 1000 TACK

Reclamation Action Action Taxas Action Taxas Action Action Taxas Action Action Taxas Action Action Taxas Action

g. Hazardous Waste Management program:

under the Resource Conservation and
Recovery Act

Recovery

overm

7.1						~~~ /\	100		Fr			
	18 A - XXX	1 K			ADM DEL	JV	aro: 73	エルクハモ	1 10° A TA			-
	7.7		3. 2. 2.						DF1 34 44			200
z.	4.4.4		Sec. 25.	100	De de la companya de	The second		STANCE LAND	The state of the s	A		-
		240.22		A 40 34 7	10.7.7 PM	444	A	12.00	Section 2.	U 3224	Jan. 18 484	35.00
٠.	4.3			2 P. Tarrier	MET 1000 CT01	C	PERSONAL PROPERTY.		100	THE OWNER OF THE		
		40 F 70	4.4	O) 1454.44			A PROPERTY OF		C 20 10 10 10 10 10 10 10 10 10 10 10 10 10	A 144 F	25.0	200

77			e sentent r	
J. PSD	ocopicon au	ider the	Cleen:Alr	Act
	i nomi eti			
100	Three of transaction	ALTARI MILI	AUTHOR: NUR	- 10 Marie
Clos	n Alic Wex			
1 Mos1		Ten Con		100
a complete	onel Emis	senii Di au	ner of Kok	4.70
	rdous Pol	lûtents (i	HESHAPS1	oracon=
COLUMN STATE	CYLONZDOO	COAR I PAUD	er the 1	

 128.00	STATE OF THE STATE	A SECTION AND ADDRESS OF THE PARTY OF		大学 医大学
	- C C 400			
en duno i	an enerm	Pa sinna	100 - 100 Miles	Mary Town
	( D) 500 di. 10	A	Same of All Ships	LONG! LE CHIES.
A	ALL STATES			art are are
tect Ton	<b>ソクタクロケア!</b>	1. 30MM - S1	DOM PROP	IAC HA

	200	TO THE TOTAL OF	NAME AND THE PARTY
		The same of the same of the same of	E STATE OF THE STA
		00 m 1 1 2 - Uni	DATE SAMPLE INTO
		100	
		TALL BOTH	
1		I WOLDS AD	or socitor.

0: 101				

The second secon		E CONTRACTOR OF THE PARTY OF TH	v es shown below:
Tigo Pro Trail	TIMETIME		
* ***********************************	TO HA OCT OUAIRS .	. ror	'Y -05" 500"00 'Y 6 LOW:

THE PARTY OF THE P	M. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.				
					and the same of th
- DWK	CALBURA L	40 FL 1 106	nt of we	Yor Res	ources
				a District	
I ALB ==		ar Cont	ro L. Roar	4 3 7 4 3	
		ie gr	THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON A		
≈√/R/C 3±	A CHARLE	DITTOOH	Thum let	Table . Tit	

·	And the second	7.00	-	TO PERSONAL PROPERTY.	
TRC .					17
C		异类形形形形 计	FOMO L	amar i iss	100
				7 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
		7.7	The second second	20 10 10 10 10 10 10 10 10 10 10 10 10 10	

WY 11 - 22 - 3	\$0006 0e	ADP WARE	7	100	
		Age Tambit?	11. 1190	1.11.00	
TOA		SOP PARA	A 12		のの事業
-aun	9/19708 108	har inteni		I CATE UK	
ACIDA	D. S. Ko				-
	الاعترام المترام المترام	a i l'oraneu		A SCATOL	- :40@NC1

South the second country of the second count

And the party of the first transfer of the second of the s

Circums at English Engogness and/of Secretics roblem along or or delectyr neur visints —P bases in only it was and a leading and a secretic 
a 1914 Melectrical Power Soverious

	a specific	on e		West West	
		ome i			/T
		ene)=			
	and the same of the			aonal il vecemin	连连接 沙耳
		forms from subm		iguels amed a	TA V S BAUGUS DI B
		he information			
		uvar e		Date (	7556
Since				Date:	
- W		The second second		The state of the state of	
SUBSC	HELE (VDE WORL)	aros in local	SPIPPIEZ	GETTE ETT.	Walter
			. <i>iedd</i>	or culque	
My co	nikision eksiri	Thursday, 17			
	- A			Money	E. Store I horse
				Notary Public	P. S. Carrier Street, S. Carrier
					**************************************
-	•	TEXAS DEF	ARTMENT OF WATE	R RESOURCES	803311
	DATE_8/18/	80 - M	AUSTIN, TEXAS	RECE	IPT NO.
	ADDRESS AND	V. J. The De Unustra Le	ine thing flas	wis Houst	on Jusa
	Suspense Fund 900	•	Special Full		
	Sales Tax Fund 961		Special Fu		

Comptr. Rev. Code 3754 Source of Funds Refend on Wer# REMARKS: Firmit appl. - 20 Le Waste - Fastage

Type of Remittance Cashilis Ch H 39504 Received by wp

J. G. Bertron ben Ste, Cedan Bayon ben Ste, W.O. Clark ben Ste Gaspartin ben

TDWR 0755 Lest. ben. Sta, breene Bayon ben Sta, W.O. Farrick ben Sta. P. H. Folian

FY\_

Special Fund 153

FY\_\_

Special Fund 158

.cc.

FY\_\_\_\_\_ CC\_

General Rev. Fd 1, Unappropriated

\_\_\_\_\_ cc.

\_<u>80</u> cc\_

General Rev. Fd 1, Appropriated

oc lilly Memo: 72241. Robinson Generating Bracisa

Siree: Aderess 17 avallable 190/A

Lincliff, Jones Livescon

And your maste management course that within the apticater tipe of the apticater tipe of the specific attention of the spe

Edition of the Ho

Layou checked "west what municipe live"

3. Give a verbal description of the location of the facility wife a world respect to known or reasily identifiable landmarks.

Located rest of San Ecom in C. Lycaton Posmicy 1878 Section (1) You May 300 Dichinson 187

THE PERSON NAMED IN COLUMN

Detail The access rouses from the meanest U.S. or State Highway...

swom() as A section() to present a section to supplied a server and the supplied and the su

publish the service of the service o

indicato from why) sourcols! (he news) and addresses by screen identified as affected were obtained.

Clay
County
School Digities
Chair Olbities
Chaire (18)

Diner ispectry

Enter the geographical coordinates of the sties

LET ITUde: 3129 deg 20 - ain 93 sec

song Lude: 194 18050 56 2 min 17 Asec

8. Is the facility located on Indian lands? Check one:

TOS TO TOTAL TO THE TOTAL TOTAL TO THE TOTAL TOTAL TO THE 
Legal Descr. pulon all Silvo

Submit as "Attachment L" Delegal description of the entire tract of familian which the was similar ment opera) long referred to in inteperall application occur. As all Loccur.

Source months to the control

Stockorby bna of temili

Is any porition by your waste management tacking after the luding proposed, acitys, and inactive poritions subject to stooding from adjacent or mearby surface water box as under the following conditions?

EXEMICACION DE CONTROL DE LOS PORTES

Are there any producing proundwater aptile on your side property:

Freedorf Engles on

1) molecula recommon of seach are 13 serve (5) when

Inches edite relating and anomal constant

(a) Hogels (r.161 dusos La Cool Hoge Telor

econ rollingur.

orable serinking is stated

n veler for livestock fined crops of

and cording

ceany au lacents or emperby autriaco content lutti such by The

is you chacked the indicate the corresponding water uses

Andus Fre Copiling

Tre-control and fer

PCCOPEROR BYEN

Star for husen took : ons

ne Cano Ties and Supertience Internal Joh

CLOBIC DOC SLOREST THE GIVEN DISCHARGE LY STILL REG TO FIGURES LEGISLOS DE LA CONTRACTOR DE LA

Your checked was Indicate the sprrasponding uses below

onte par stone or - rab, overcit rall to spreamers rather to stand a teampatane

## TILL LIASTES AND LIASTE LIARREELENT?

Clasta Conorgilon and Management (Glasticity)

is any hazardous impostrial solid cacle face This 20, Code of 26) Pocoscinitries produstratio 200 reprensitatis Rogula) logs, 120 Spelf (117)

IL TARS THOU STREETS IN THE DESIGNATION OF THE POST OF

is you chacked too," contact the solid loads Soulon of TUTR n (Augy) n. Hores 20 sobies necession liken theorem (Ion: 1120), coard

Continue to the series of the

In the common of 
The care with the course of the course of the care of the course of the

in services on the complete of mostes of all comes, incorporate as a following services and the process of the comes, and the services of the process of the complete of the c

cente control control control and the power with the control of the least of the control of the least of the control of the least of the control of the cont The summer of th

Light Chiangle on the color of the change

### P. H. Robinson Generating Station

Table III I Generated Hazardous Wastes and Management Activities

Verbal Hescription of Waste	10WA Sequence Number	1 DWIL Waste Code Number	LPA Hazaed Code	l PA Hazardous Waste No.	UH Site Dispusal		gement Activities plicable items) Do Site Processing <sup>)</sup>	Disposal	Annual Augustity Generated {lbs}	St#: Code and Pincess
ierakozer 🦠 🦠				155457		u	v		1,013X10 <sup>6*</sup>	
pergrand	NV	NΛ	C;	0002		Х	<b>X</b> .		1,013/10	
neralizer Regeneran	11									
gan (c. 51ml)ge	2	140540	I;	-	χ	χ	••		**	
t Cleaning ganic Acids	NΛ	NΛ	H,C.	D007, D00	)	<b>X</b>	<b>X</b>		4,000*	
gante Actus L'Eleaniny	147(	14/(	11 4 6.	0000	<b>.</b> .	^	<b>X</b>	•	.—	
ire. Acids	NΛ	NΛ	E		X	Х	. <b>X</b>		20,400,000*	
l Cleaning	NIX	1.49000	Į.		X	v			8,000	
ric Sludge real Weste Treat	NΛ	148990	•		۸	Х			*** *** **	
System Sludge	NΛ	NΛ	1:	0007	X	. <b>X</b>	. <b>X</b>	-	140,000	
			To		X	v	v		47,250	
s Oil & Studge saving and	١.	110450	T,O	1:003	^	Х	X			• • • • • •
- Solvents	NΛ	ΝΛ	1,T	F005	X	Х			8,400	
									600***	·
Joseph insulation	NΛ	170750	I.	0013	X	Χ.	X	-		
Ash Wash Glinlye,	NΛ	NΛ			X	X	X		**	

Itreated amounts, normally treated and discharged under wastewater permits Unknown, small amount Actual percent asbestos content is variable but small

<sup>\*</sup> Place up? means the interior contaminent or control of waste after generation and prior to officiate disposal

Processing" means the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid seasts for nease or disposal, including the treatment or neutralization of hazardous waste so as to render such so sets nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced volume. The "transfer" of solid seasts for neare or disposal as need above, does not include the actions of a garren in conveying or transporting solid waste by truck, slop pipeline, or other means.

hol-app (Jenn) alcany - the Constitution (Established State) as Imp/, 267 as I (1906), series to but the Valle collicition in

Parkod sas hoxordous worker

and encourage to a large street of the constant of the street of the str roro once ul l'eco at gour priont 8 l'a sul l'armo, tongar basto. El persone l'armitale de la componinte la second de la company de la company de la company de la company de la

Tario Li Tradens evasticas des II and Alama de volta orason ( ) y proposed an eorigoneral ar seconderal seco

Lar such facility component indicated without the distance of the distance of the contract of component as apacified in the earlier Tobles.

etve the design capacity of pach taclies recomponent in any white them: "In the passes struct to be IT lies for which data (source unavailable, cares (ma)/2 of this waston tapacit

Deservation of the Feach (Defert) (Company) - English be described to the company of the company

surezanen) iki 1747 orra-rioa esirilikilarako kirikizailari etailarria.

to a laste Management & actification and Lemonents. o dond on boundar les of sign marall olba

The approximate bounderies of the site described in Sec THE DECEMBER OF THE PROSE DOUBLE FOR FURTHER TO THE SOUTH SERVICE OF THE SERVICE 

Table III-J Inactito Nazardous Indoperational In Table III ord 

food in searchen; coove-grade united

And Learn The Insertive weelt by Demoonship high Third The 1900 of The Company of Security of hezerous deside or allutures complining taky hezerous company and ol-much the lity remonants in the socia toget domes

Logoon/Pond Subject Cartellor out the Arms

Adasin (sor her chove-hade), inchy Flood Implortion Alles

Basin Lear Nan, beigw-grade (Wood) optic for operious

Injection Vell - Basin (earthen, below-grade Unitradi

Basin Lonce 172 Dove-or and Mandle M. Tampace Erocage) . T. Desin iconcrete, above-grade unitin om 1 Job-sur Folge at or ago 1 2 2 and

- Beein Loncon, belen-grade oul: (Suctoco ococess (no.) 35 ts

icon Storage, attack epent Mir In I have Man Victor Storage Wash Kene Cospo.

and mether afor Ocum Storage was rether?

ON DISCOMPANIA TROUBLE estalizan kisatro Pura protein et ion largi. Control of the special of the second special s

The state of the s

NUMBER TOPSECTIVE Candill' Walic Jace, open! To the second of the state of

Facility Comp			Status		**************************************	Design Capac	ity	Number of	
Name	TDWR Seq. No.	Inactive	Active	Proposed	(cu yds)	(gal)	(lbs)	Years Utilized	in Service
Lagoon/Pond (lined)			X			500,000		2	1978
verbai bescribilon:	Clay lined pond	for the col	lection	& equaliza	tion of de	mineralizer	regeneration wa	ste prior	to treatmen
Sludge accumulated at	the pond bottom	is periodio	ally rem	noved for o	ff-site di	sposal.			
* Tank (Surface Proces	ssing)		X			33,900		2	197
Verbal Description:	reatment system	(Surface pi	rocessing	) for neut	ralization	consists of	One(1) mixing	chamber (	500 gallon),
one (1) flocculation o	chamber (4100 gal	lon), one(	l) settli	ng chamber	(28,000 g	allon) and o	ne(l)pH readju	stment char	(1200 nber gallon)
Lagoon/Pond (lined)			X		<del></del>	60,000		2	1978
Verbal Description: (	Clay lined pond 1	or the col	lection c	of metal cl	eaning ino	rganic acid	wastes from bo	iler & equ	ipment
cleaning operations pr	rior to treatment	. Sludge a	accumulat	ed at the	pond botto	m is periodi	cally removed	for off-si	te disposal.
Lagoon/Pond (lined)			X	•		850,000		2	1978
Verbal Description: (	Clay lined pond 1	for the col	lection o	of metal cl	eaning org	anic acids f	rom boiler cle	aning opera	ations
prior to boiler inject	tion. Sludge acc	cumulated at	t the por	l nd bottom i	s periodic	ally removed	for off-site	disposal.	
Basin (earthen, below	grade lined)	-	X		<u>676 (ea</u> )			3	1977
Verbal Description:	Six clay lined s	sand drying	beds for	the colle	ection & pr	ocessing of	sludge from the	e chemical	waste
treatment system and o	oily waste treatm	ment system	. Dried	sludge is	periodical	ly removed f	or off-site di	sposal.	
Tank (surface storage	)		<u> </u>			3,000		2	1978
Verbal Description:	Tank used for the	e collection	n of wast	te oil & sl	udge which	is accumula	ted from the o	ily waste	treatment
system. This waste is	s periodically to	rucked off-	site for	disposal.	-				

<sup>\*</sup> Chemical Waste Treatment System

#### Table III I Ha as sore Waste Lacility Components List

facility Com	ponent	,	Status			Design C <mark>apaci</mark>	ty	Number of	Date
Name	TOWR Seq. No.	Inactive	Active	Proposed	(cu yds)	(gal)	(lbs)	Years Utilized	in Service
Other	n maganippopulations de la constantina		X	offert widow common annual to	NΛ	NΛ	NΛ	NA	NA
Verbal Description:	Asbestos used for	r insulati	on will	be placed i	n bags and	wet down pri	or to off-site	disposal.	·
Actual percent asbes	tos content is var	iable but	small.						
Drum storage area (ot	ther)		×		NA	NA	NA	NA	NA
Verbal Description:	Drum storage area	for the c	ollectio	n of waste	solvents u	ısed in degrea	sing and pain	ting operation	ons.
Drums will be dispose	ed of off-site.								
Lagoon/Pond (lined)			X			2,500,000		6	1974
Verbal Description:	Ash sludge gener	ated from	the clea	ning of air	r pre-heate	er economizer,	collected an	d accumulate	d in the
ash pond and the accu	umulated sludge is	periodica	lly remo	ved for off	-site disp	osal.			•
			The second desired and the second desired desi						
Verbal Description:							**************************************	<del></del>	***************************************
·						**************************************			
			-			<del></del>			•
Verbal Description:	• was a street and a street		age-re-re-amplicate						<del></del>
ver gov podopo	The state of the s	the second second				· · · · · · · · · · · · · · · · · · ·			
/erbal Description:				Andrew Service and Angelogical Control		****			***************************************
vervor vesoripiton;									
		m			· · · · · · · · · · · · · · · · · · ·				<del></del>

C. FAIL Inspection of the Average Louisian are transcribed and the County of County of the County of Count

vii vii voi es a sociato, compresso de la comp

Jean Garally administration of the control of the c

#### D. Flow Diegram/Description

Short on "Attrachment to process the "Jupy one of the eyestable area of several and severa

# logina) in prover and administration of the base of the analysis of the constant of the consta

The state of the s

de Montrand Zune Poper de de La que d'Estat de Componient de la componien

Concern to more or tennes un consent a l'Assistant de la consent de la c

### Note to the second seco

TIAN CONTRACTOR OF THE CONTRAC

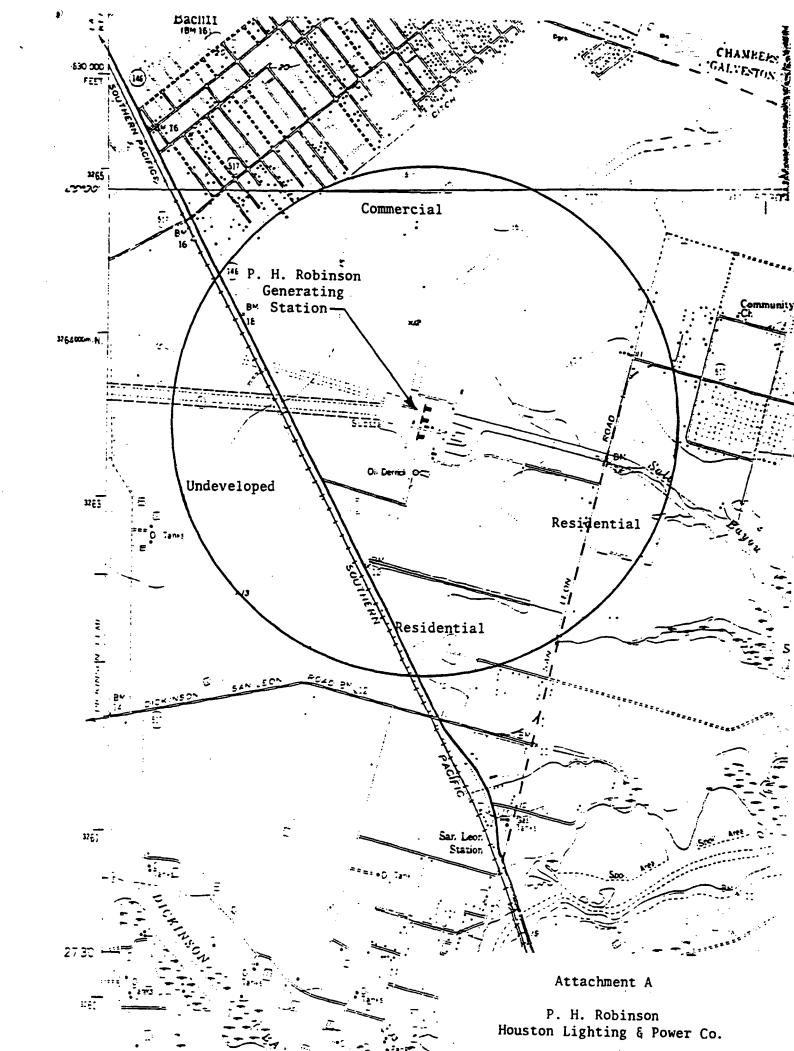
CALLEGE BROXEGEDIES.

THE TANK THE PROPERTY OF THE P

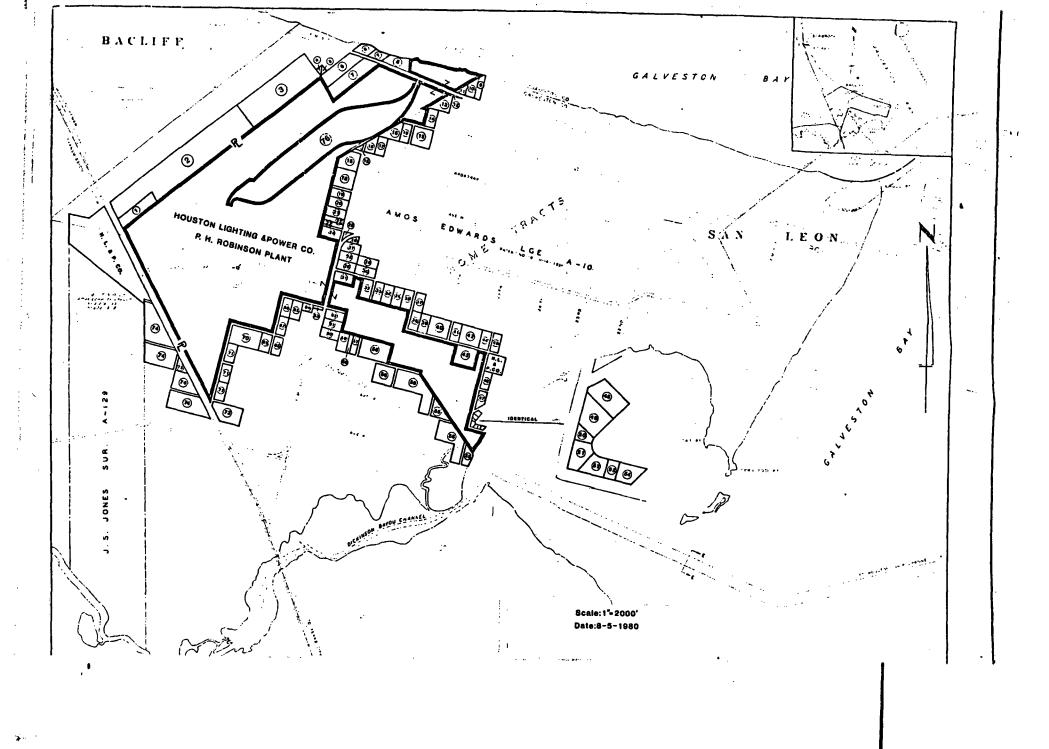
ing the walk (Simple concrete 
Taka Palatan

inder the state of the state o

ATTACHMENT A



ATTACHMENT B



### Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Demineralizer Regenerant
Process (see last column in Table III-I)	Water Treatment
TDWR Sequence Number of Waste (if assigned)	NA
Indicate the facility components used for s specified waste by entering the number of s is managed.	
Lagoon/Pond (unlined)	Lanofarm
1 Lagoon/Ponc (lined)	Lancspreading Area
Basin (earthen, above-grade lined)	Spray Irrigation Area
5asin (earthen, above-grade unlined)	Flood Irrigation Area
Basin (earthen, below-grade lines)	Septic Tank/Drain Field
Basin (earther, below-grade unlined)	Injection We!
Basin (concrete, above-grade lined)	Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	*] Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Sasin (other)	Tank (other)
Pit (lined)	Drum Storage Area (open)
Pit (unlined)	Drum Storage Area (enclosed)
Incinerator	Drum Storage Area (other)
Open Controlled Incineration Area	Bulk Storage Area (open)
Boiler (energy-producing)	Bulk Storage Area (enclosed)
Landfill (sanitary)	Bulk Storage Area (other)
Landfill (surface, open)	Other (specify
Landfill (other)	)
	*Chemical Waste Treatment System

### Table 111-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Demineralizer Regenerant Inorganic Sludge
Process (see last column in Table III-1)	Water Treatment
TDWR Sequence Number of Waste (if assigned)	2
indicate the facility components used for stranged for stranged the number of sures managed.	
	Landfarm
1 Lagoon/Ponc (Inec)	Lancspreading Area
Basin earther, above-grade lined.	Spray 'rrigation Area
Basin earther, above-grace unlined:	Flood errigation Area
Basin earthen, below-grade lined:	Septic Tank/Drain Field
Basin earthen, below-grade unlined	injection Well
Easin concrete, above-grace (inect	Tank isurface storage
Basin concrete, above-grace un inec.	Tank sub-surface storage
Basin concrete, below-grade inec:	Tank surface processing
Basin concrete, below-grade unlined	Tank isub-surface processing
Basin (other)	Tank (other)
Pi- Hined)	Drum Storage Area Eccer
Pit (un(ined)	Drum Storage Area (enclosed:
!ncinerator	Drum Storage Area (other)
Coen Controllec Incineration Area	Bulk Storage Area (open)
Boiler (energy-producing)	Bulk Storage Area (enclosed
Lancfill (sanitary)	Bulk Storage Area (other)
Lancfill (surface, open)	1 Other especify periodically removed
lancfill (other)	for off-site disposal

### Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Metal Cleaning Inorganic Acids
Process (see last column in Table III-I)	Equipment Cleaning Operations
TDWR Sequence Number of Waste (if assigned)	NA .
Indicate the facility components used for some specified waste by entering the number of some same anaged.	
Lagoon/Pond (unlined)	Landfarm
1 Lagoon/Ponc (lined)	Landspreading Area
Basin (earthen, above-grade lined)	Spray Irrigation Area
Basin (earthen, above-grade unlined)	Flood Irrigation Area
Basin (earthen, below-grade lined)	Septic Tank/Drain Field
Basin (earthen, below-grade unlined)	Injection Well
Basin (concrete, above-grade lined)	Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	*1 Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Sasin (other)	Tank (other)
Pit (linec)	Drum Storage Area (open)
Pit (unlined)	Drum Storage Area (enclosed)
Incinerator	Drum Storage Area (other)
Open Controlled Incineration Area	Bulk Storage Area (open)
Boiler (energy-producing)	Bulk Storage Area (enclosed)
Landfill (sanitary)	Bulk Storage Area (other)
Landfill (surface, open)	Other (specify
Landfill (other)	)

## Table 111-2 Hazardous Waste Management Facility Component Summary Sheet

Verta: Description of Waste	Metal Cleaning Inorganic Sludge				
Process (see last column in Table III-I)	Equipment Cleaning Operations				
TDWR Sequence Number of Waste (if assigned)	NA				
incidate the facility components used for strapedified waste by entering the number of sures managed.					
	Landfarm				
1 _agoon/Fonc   Thech	lancspreading Area				
Basin Tearthen, above-grace lines.	Spray Irrigation Area				
Basin (earther, above-grace unlined)	Flood :rrigation Area				
Basin earthen, below-grade [ined]	Septic Tank/Drain Field				
Basin learnnen, below-grade unlined:	injection We!!				
Basin concrete, above-grace lineci	Tank   surface storage				
Basin Concrete, above-grace unlined.	Tank isub-surface storage				
Basin concrete, delow-grace lines	Tank surface processing				
Basin concrete, below-grase unlined	Tank isub-surface processing				
Basin Former	Tank (other)				
= Pit (lines)	Drum Storage Area Copen				
= Pit (untined)	Drum Storage Area lenc:osec				
	Drum Storage Area (other)				
Open Controlles Incineration Area	Bulk Storage Area (open)				
Boiler (energy-producing)	Bulk Storage Area renclosed)				
Landill (sanitary)	Bulk Storage Area (other)				
Lancfill (surface, open)	1 Other (specify periodically remove				
+ancfil! (other)	for off-site disposal				

Table 111-2 Hazardous Waste Management Facility Component Summary Sheet

Verbai Description of Waste	Metal Cleaning Organic Acids
Process (see last column in Table III-I)	Boiler Cleaning Operations
TDWR Sequence Number of Waste (if assigned)	NA
indicate the facility components used for strandardiffed waste by entering the number of substrandard.	
	Lancfarm
	landspreading Area
Basin earthen, abové-grace linec.	Spray orrigation Area
Basin earthen, above-grace unlines;	Flood Prigation Area
Basin earthen, below-grade lined:	Septic Tank/Drain Field
Basin earther, below-grade unsined	injection We
Basin concrete, above-grade Pinedi	Tank surface storage
Basin concrete, above-grade un inec.	Tank sub-surface shorage
Basin concrete, below-grade inec	Tank surface processing
Basin (concrete) de bw-grade un inec	Tank sub-surface processing
Basir corper	Tank other
=:- inec:	Drum Storage Area Coper
=1- (un:ined)	Drum Storage Area (end osed)
(ncinerator	Drum Storage Area (other)
Open Controller Incineration Area	Bulk Storage Area (open)
Boiler (energy-producing)	Bulk Storage Area (enclosed)
	Bulk Storage Area (other)
	1 Other (specify Boiler Injection
Lancfill (other)	on-site Disposal

Table !!!-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Metal Cleaning Organic Sludge
Process (see last column in Table III-I)	Boiler Cleaning Operations
TOWR Sequence Number of Waste (if assigned)	NA
indicate the facility components used for st specified waste by entering the number of su is managed.	
	Lancfarm
1 _accor/Ponc   Cineci	lancspreading Area
Basin earthen, above-grade linec.	Spray Errigation Area
Basin earther, above-grade unlined)	Flood rrigation Area
Easin earthen, below-grade lined.	Sectio Tank/Drain Field
Basin learthen, below-grade unlined	njection were
Basin (concrete, above-grace : nec)	Tank isunface storage:
Basin concrete, above-grade un inec.	Tank sub-surface storage
Basin concrete, below-grace inec	Tank surface processing
Basin (concrete, below-grace unlined)	Tank . sub-surface processing
Easin tother	Tank (ciner)
Pit (linec)	Drum Storage Area Topen
=:f :un:inec)	Drum Storage Area (enciosed)
Incinerator	Drum Storage Area (other)
Open Controller incineration Area	Bulk Storage Area (open)
Sciler (energy-producing)	Bulk Storage Area (enclosed) -
Lancfill (sanitary)	Bulk Storage Area (other)
Landfill (surface, open)	1 Other (specify periodically removed
Lancfill (other)	for off-site disposal.

Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Chemical Waste treatment System Sludge		
Process (see last column in Table III-I)	Sludge generated from wastewater treatment		
TDWR Sequence Number of Waste (if assigned).	NA processes.		
incicate the facility components used for sto specified waste by entering the number of suc is managed.			
	landspreading Area		
Basin Gearther, above-grade lined:	Sprak _rrigation_Area		
Basin earther, above-grace unlined)	Flood irrigation Area		
2 Basin earthen, below-grade lined;	Septic Tank/Drain Field		
Basin earther, below-grade unlined	njection Well		
Basin concrete, above-grade lineci	Tank   surface storage		
Basin concrete, above-grade un inec.	Tank sub-surface shorage		
Basin concrete, below-grace inec	Tank surface processing		
Basin (concrete, below-grade unlined)	Tank   sub-surface processing		
Basin icther	Tank other:		
Pit Hinec)	Drum Storage Area Hopen-		
=:: (unlinec)	Drum Storage Area (encloses		
'ncinerator	Drum Storage Area (other)		
Open Controlled Incineration Area	Bulk Storage Area (open)		
Boiler (energy-producing)	Buik Storage Area (enclosed)		
Lancfill (sanitary)	Buik Storage Area (other)		
Lancfill (surface, open)	1 Other ispecify <u>dried sludge</u> periodical		
Eancfill (other)	removed for off-site disposal)		

### Table III-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Waste Oil and Sludge
Process (see last column in Table III-I)	Oil & Sludge from oily waste treatment system
TDWR Sequence Number of Waste (if assigned)	1
Indicate the facility components used for st specified waste by entering the number of su is managed.	
Lagoon/Pond (unlined)	Landfarm
Lagoon/Pond (lined)	Landspreading Area
Sasin (earthen, above-grade lined)	Spray Irrigation Area
Basin (earthen, above-grade unlined)	Flood Irrigation Area
6 Basin (earther, below-grade lined)	Septic Tank/Drain Field
Basin (earthen, below-grade unlined)	Injection Well
Basin (concrete, above-grade lined)	1 Tank (surface storage)
Basin (concrete, above-grade unlined)	Tank (sub-surface storage)
Basin (concrete, below-grade lined)	Tank (surface processing)
Basin (concrete, below-grade unlined)	Tank (sub-surface processing)
Basin (other)	Tank (otner)
Pit (linec)	Drum Storage Area (open)
Pit (unlined)	Drum Storage Area (enclosed)
Incinerator	Drum Storage Area (other)
Open Controlled Incineration Area	Bulk Storage Area (open)
Boiler (energy-producing)	Bulk Storage Area (enclosed)
Landfill (sanitary)	Bulk Storage Area (other)
Landfill (surface, open)	1 Other (specify <u>dewatered sludge</u> and waste
Lancfill (other)	oil are trucked off-site for disposal)

### Table 111-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Degreasing and Paint Solvents				
Process (see last column in Table III-I)	Degreasing and painting operations				
TDWR Sequence Number of Waste (if assigned)	NA				
indicate the facility components used for st specified waste by entering the number of su is managed.					
	landspreading Area				
Basin earthen, above-grace linec	Spray frrigation Area				
Basin earther, above-grade unlined;	Flood irrigation Area				
Easin earther, below-grade lined.	Septic Tank/Drain Flets -				
Basin learther, below-grade unlined:	injection we				
Basin concrete, above-grade inect	Tank surface storage				
Basin concrete, above-grade un inec.	Tank sub-surface shorage				
Basin concrete, below-grace inec	Tank surface processing				
Basin concrete, below-grace unlined:	Tank sub-surface processing				
Basin Fother	Tank .other)				
Pir (rinec)	Drum Storage Area Rober				
Plf (unlinec)	Drum Storage Area Pend oses:				
'ncinerator	1 Drum Storage Area (other)				
Open Controlled Incineration Area	Bulk Storage Area (open)				
Boiler (energy-producing)	Bulk Storage Area (enc:osec):				
Lancfill (sanitary)	Bulk Storage Area (other)				
lancfill (surface, open)	Other (specify <u>Drums are trucked</u>				
Lancfill (other)	off-site for disposal				

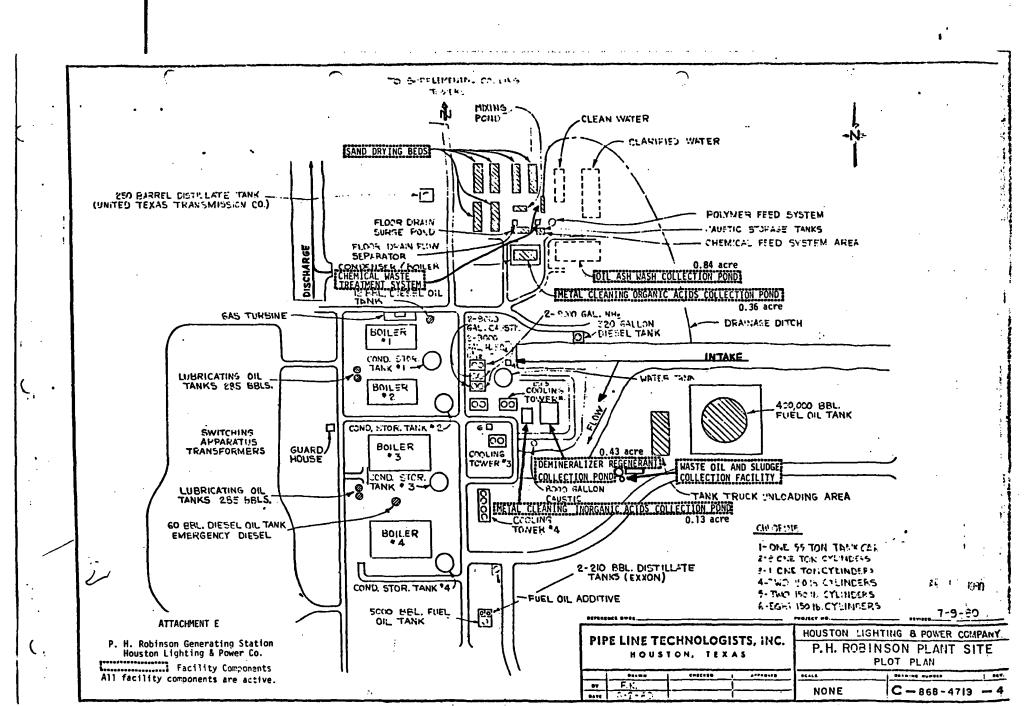
### Table [1]-2 Hazardous Waste Management Facility Component Summary Sheet

Verbal Description of Waste	Asbestos				
Process (see last column in Table III-I)	Insulation				
TDWR Sequence Number of Waste (if assigned)	NA				
incicate the facility components used for sto specified waste by entering the number of suc is managed.	• •				
	Lancfarm				
	canospreading Area				
Basin earthen, above-grace linec.	Scray irrigation Area				
Easin earther, above-grace unlined:	Floor orrigation Area				
Basin learner, below-grade linec.	Septic Tank/Drain Field				
Basin learthen, below-grade unlined:	.njection Well				
Basin concrete, above-grade ineci	Tank surface storage				
Basin concrete. above-grade un inec.	Tank sub-surface storage				
Easin concrete, below-grace inec	Tank surface processing				
Basin concrete, below-grade un ineci	Tank sub-surface processing				
Easir Fother's	Tank (other)				
Pir trinect	Drum Storage Area (oper				
Pit (unlinec)	Drum Storage Area (encloses)				
incinerator .	Drum Storage Area (other)				
Open Controlled Incineration Area	Bulk Storage Area (open)				
Boiler (energy-producing)	Bulk Storage Area (enclosed)				
Lancfill (sanitary)	Bulk Storage Area (other)				
Lancfill (surface, open)	X Other (specify will be placed in cans				
Landfill (other)	for off-site disposal				

### Table 111-2 Hazardous Waste Management Facility Component Summary Sheet

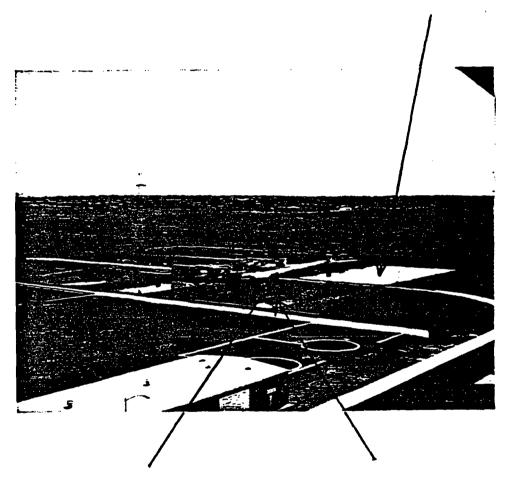
Verbal Description of Waste	Oil Ash Wash Sludge  Equipment Maintenance Operation  NA		
Process (see last column in Table    -			
TDWR Sequence Number of Waste (if assigned)			
incicate the facility components used for st specified waste by entering the number of su is managed.			
	Lancfarm		
1 _agoon/Pons   Cineck	lancspreading Area		
Basin earthen, above-grace linec.	Sprakriganion_Area		
Basin earner, above-grace unlined	Flood Prigation Area		
Basin learthen, below-grade lined;	Septic Tank/Orain Field		
Basin learthen, below-grade unlined:	Rnjedrion we		
Basin concrete, above-grace inec	Tank surface shorage		
Basin concrete, above-grace un inec.	Tank suc-surface shorage		
Basin concrete, below-grace lineor	Tark surface processing		
Basin concrete, below-grace un ineci	Tank sub-surface processing		
Basir other:	Tank other:		
=:• ·:inec:	Drum Storage Area Roben		
Pit .un(inec)	Drum Storage Area (encloses		
incinerator	Drum Storage Area (other)		
Open Controlled Incineration Area	Bulk Storage Area (open)		
Boiler (energy-producing)	Bulk Storage Area (enclosed):		
ancfili (sanitary)	Bulk Storage Area Lother'		
Lancfill (surface, open)	1 Orner specify periodically removed		
Lancfill (other)	for off-site disposal		

ATTACHMENT E



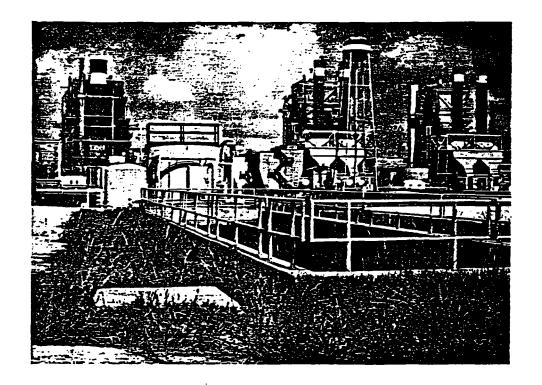
ATTACHMENT F

### OIL ASH WASH COLLECTION POND

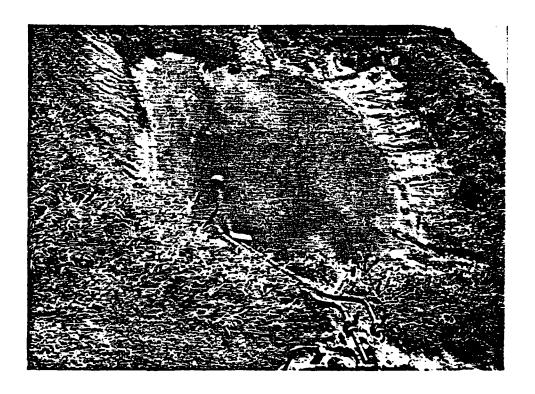


CHEMICAL WASTE TREATMENT SYSTEM

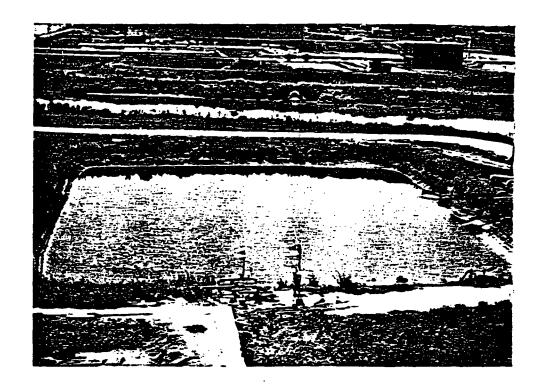
METAL CLEANING ORGANIC ACIDS COLLECTION POND



WASTE OIL & SLUDGE COLLECTION FACILITY



METAL CLEANING INORGANIC ACIDS COLLECTION POND



DEMINERALIZER REGENERANT COLLECTION POND



SAND DRYING BEDS

ATTACHMENT G

#### P. H. Robinson Generating Station

Process Description for Hazardous Waste Streams

### 1. Demineralizer Regenerant Waste (EPA Hazard Code C) Demineralizer Regenerant Inorganic Sludge (EPA Hazard Code E)

The demineralizer regenerant wastes (DRW) are piped to the acid retention pond by gravity for preliminary equalization and sedimentation. The settled DRW sludge will be periodically removed for off-site disposal. The DRW is pumped to the chemical waste treatment system which consists of mixing, flocculation, settling and pH readjustment chambers for pH adjustment and suspended solid removal.

### 2. Metal Cleaning Organic Acid (EPA Hazard Code E) Metal Cleaning Organic Sludge (EPA Hazard Code E)

The organic metal cleaning wastes (OMCW) from the hydroxyacetic-formic acid (HAF) method will be collected in a pond for preliminary sedimentation and retention via gravity pipelines. The settled OMCW sludge will be removed periodically for off-site disposal. The OMCW will be injected into the on-site boiler for inceneration at a controlled rate.

### 3. Metal Cleaning Inorganic Acid (EPA Hazard Code C,E) Metal Cleaning Inorganic Sludge (EPA Hazard Code E)

The miscellaneous minor equipment cleanings such as for condensers and heaters are collected in the Inorganic Cleaning Waste Pond and then treated in the Chemical Waste Treatment System for pH adjustment, suspended solids removal and heavy metal removal. The settled sludge accumulated in the basin bottom will be removed periodically for off-site disposal.

### 4. Chemical Waste Treatment System Sludge (EPA Hazard Code E)

The sludge generated in the Chemical Treatment System is pumped to the sludge drying bed from a sludge sump for dewatering. The chemical waste treatment system sludge accumulated on the top of sand bed will be removed periodically and trucked for off-site disposal.

#### 5. Waste Oil and Sludge (EPA Hazard Code T,O)

The waste oil and grease removed from the floor drainage treatment system (oil trap, API separator and Tricellorator) and SPCC treatment system are collected in a waste oil sump. The collected waste oil and grease will be trucked and injected into a boiler as fuel. The oily sludge generated in the treatment system is trucked to the sludge sand drying bed for dewatering and off-site disposal.

#### 6. Oil Ash Wash Sludge

The oil ash wash system is utilized to remove the accumulated soot and ash from the air preheater, economizer, etc. during the oil-firing period. The oil ash wash waste is treated for pH adjustment with time and second in an oil ash wash pond. The accumulated oil ash wash sludge will be removed and trucked for off-site disposal periodically.

COMMUNICATION Co	one Call Discussion onference Other (speci	fy) Field Trip
Reference 6	<u> </u>	
	(Record Of Item Checked	Above)
TO: Betty Burris Bacliff Water District Bacliff, TX	FROM: Alex Zocchi FIT Chemical Engineer ICF Technology	DATE: 4-5-89
(713) 339-1639 Dallas, Texas (214) 744-1641		TIME: 11:05 a.m.
SUBJECT: Water usage in Bacl	iff, TX	
purposes. The drinking wa	they are not allowed to use that ter for Bacliff is purchased	
on the Brazos River. Ms. Bacliff is used for fishir	which gets the water from the Burris also said that the res ag but not boating and that so son Bayou and along the coast.	e intakes located ervoir south of ome fishing and
on the Brazos River. Ms. Bacliff is used for fishir	which gets the water from the Burris also said that the res ig but not boating and that so son Bayou and along the coast.	e intakes located ervoir south of ome fishing and

*i* 

RECORD OF COMMUNICATION Reference 7		one Call	Discussion Other (speci	Field Trip		
(Record Of Item Checked Above)						
TO: Joe Wilhelm Galveston Water Authority		FROM: Alex Zocchi FIT Chemical Engineer ICF Technology		DATE: 4-5-89		
Galveston, Tex (409) 935-2438	as Dallas, Texas		las, Texas	TIME: 11:25 a.m.		
SUBJECT: Water intakes on the Brazos River						
SUMMARY OF COMMUNICATION:  Mr. Wilhelm said that the Galveston Water Authority has two water intakes on the Brazos River. One is located north of the City of Richmond Rosenburg; the other is located just south of Arcola, TX. Both intakes are approximately 45 miles north of Bacliff, TX. Mr. Wilhelm said that there are no other water intakes in the area around Bacliff.						
CONCLUSIONS, ACTION TAKEN OR REQUIRED:						
INFORMATION COPIES TO:						
EPA Form 1300-6 ( Replaces EPA HO F		Which May	Be Used Until Supp	ly Is Exhausted.		



#### REF 8

TWC Reg. No. 31638

## TEXAS WATER COMMISSION Comprehensive GW Monitoring Evaluation (CME) Report

### INSPECTION COVER SHEET

		C.O.Use Only
EPA ID No. TXD000837401		Date Entry Date
NAME OF COMPANY HL&P, P. H.	Robinson Generat	ting Station
SITE ADDRESS Hwy 146 - P. O.		McGuire Tel 712-922-2201
COUNTY Galveston TYPE OF	Houst INDUSTRY Electrica	
Current GW Monitoring Status:	Detection until	l final closure
(Specify for each Waste Management Area "WMA")		
Inspection Information:		
Inspector(s) Mary L. Ambros	se and Marilyn C.	Long Date(s) 3-16-87 V
Participants Richard Bye an	nd Doug Chin of F	HL&P
Type of Inspection (check) EV	CME _x SA	
Evaluation: S	U,	Signed. Want I de basson
A. Monitoring System x		Signed: Mary I. Ambrose Inspector Date: 3-20, -87
B. Sampling Procedures	_ <u>X</u>	bace. J-ZC, SF
C. Analysis & Results		Signed: Sandha Cudena  Reviewer
D. Records & Response		Date: 3/36/87
S= Satisfactory	sfactory	
Overall Evaluation: Compli	iant_x NonCompli	ant

Summary of deficiencies HL&P, P. H. Robinson Generating Station TWC Reg. No. 31638

Attached is the Comprehensive Monitoring Evaluation (CME) inspection report. As a result of the evaluation which included an on-site inspection conducted on March 16, 1987, the following deficiencies were noted but were not considered violations due to prior approval of HL&P practices by TWC correspondence.

- 35 TAC § 335.112/ 40 CFR § 265.91: The company does not have a ground-water monitoring system installed for the Demineralizer/ Non-Oily Floor Drain Mixing Impoundment. This hazardous unit was certified closed on 02-20-87 as per the approved closure plan. Approval was dated 08-06-85.
- 35 TAC § 335.112/ 40 CFR § 265.91(a)(2): The downgradient wells MW-02 and MW-04 are located upgradient of the waste management area (WMA). Only one well is located downgradient of the facility. The monitoring system received indirect approval by the TDWR in a letter dated 08-13-84, which reviewed the ground-water assessment report. Both units at the WMA have been certified closed according to the approved closure plans.
- 35 TAC § 335.112/ 40 CFR § 265.92(b)(3): The described procedure for non-preservation of ground-water samples for TOC, TOX, and Phenol would questionably provide reproducible values. The field equipment was not decontaminated between wells, which could result in cross contamination of samples if contamination was present at any HL&P site. The company has certified all WMAs at the facility to be closed according to the approved closure plans.

Many & Ambrose

### TECHNICAL REPORT Comprehensive Ground-water Monitoring Evaluation (CME)

#### I. Introduction

- A. Company: Houston Lighting and Power Company, P. H. Robinson Generating Station
  - 1. Process description: Electrical power generation
  - 2. Plant site has been in operation since: 1966
- B. Physiography and Climate
  - 1. Site Topography Attachment A-1 (indicate site location directly on map or reproduction)
  - 2. Average Annual:
    - a. Rainfall 48 in
    - b. Temperature 69 F
    - c. Evaporation 50 in
  - 3. Surficial Soils Map Attachment A-2

Soil description - The waste management units are located on Lake Charles Clay, a black of dark-gray heavy clay, sticky and waxy when wet but becoming hard and cracking deeply when dry. The dark clay surface soil grades below, at a depth of about 12 inches, into dark-gray clay which, in turn, grades into the calcareous parent material at a depth of about 5 feet. The surface relief in most places is flat, and water stands for a long time after rains. Typical pH at a depth of 60 to 70 inches is 8.19.

- 4. Surface water bodies and other recharge/discharge features or wells: Salt Bayou, immediately adjacent to the site, is used by the station as intake water. Next nearest water bodies are Dickinson Bayou, approximately 1.5 miles to the southeast and Galveston Bay, approximately 1.8 miles to the north-northeast. The generating station has five water supply wells completed at a total depth of > 650 ft. A total of 108 water wells are located within 2.5 miles of the site. The majority of the wells are completed in the Lower Chicot or Evangeline Aquifers and range in depth between 67 to 970 feet below surface.
- 5. Other pertinent features: The facility is located on the Gulf Coastal Basin; which consists of a thick, gulfward dipping, wedge of Recent, Quaternary, and Tertiary sediments that overlie Mesozoic Era Sediments and bedded salt. Growth faults are

associated with the wedge of sediments. Processes responsible for the development of the faults are sediment deposition, differential compaction of sediments, upward movement of salt masses, gulfward creep of the coastal land mass, and bending of the land mass due to regional tectonics. The faults are both active and inactive, and movement has not cause structural failures. Large withdrawals of ground water from the Evangeline and Chicot Aquifers has caused the compaction of sediments and subsidence in the area, which has been approximately three feet since 1906 (Attachment A-3).

- C. Waste Management Units Requiring Ground-water Monitoring
  - 1. Indicate units on Site Diagram (Attachment A-4)
  - 2. Indicate waste management area (WMA) boundaries on Site Diagram (Attachment A-5)
  - 3. Waste management units (complete this section for each waste management unit):

Unit name - Demineralizer Regenerant Impoundment (01) Size - 500,000 gal, 0.43 acre, 150 x 170 x 10 ft

Year in service - 1966
Status\* - closed
Construction - Clay lined

\*active, closed, inactive, regulated unit, nonhazardous

Comments: Certified closed on 02-20-87 as per the approved closure plan. Used for collection and equalization of acid demineralizer and base regeneration waste prior to treatment. Sludge accumulated at the pond bottom was periodically removed for off-site disposal.

Unit name - Inorganic Metal Cleaning Impoundment (02) Size - 200,000 gal, 0.13 acre, 80 x 75 x 10 ft

Year in service - 1966 Status\* - closed Construction - Clay lined

\*active, closed, inactive, regulated unit, nonhazardous

Comments: Certified closed on 11-27-85 as per the approved closure plan.

Unit name - Demineralizer/Non-Oily Floor Drain Mixing

Impoundment (03)

Size - 60,000 gal

Year in service - 1978
Status\* - closed
Construction - Clay lined

\*active, closed, inactive, regulated unit, nonhazardous

Comments: Certified closed on 02-20-87 as per the approved closure plan. This unit was connected by pipe line to units 1 and 2 and it could not be proven that pH and metals levels of waste had not been hazardous. Company elected to close as a hazardous unit, but no ground-water monitoring system is in place. Sludge accumulated at the pond bottom was periodically removed for off-site disposal.

#### II. Technical Review

- A. Ground-water Monitoring System
  - 1. Regional Geology (Houston Sheet, Geologic Atlas of Texas)
    - a. Physiographic province: Gulf Coastal Plan
    - b. Formation(s): Alluvium and the Beaumont Formation of Pleistocene age deposited as a fluvial/deltaic system during an interglacial period. The facility is located in an interdistributary area of the delta plain. The environment of deposition was probably a closed, shallow water area. The sediments in the facility area are clay-dominated and are due to overbank flooding deposition. Some marine facies may be present as lagoonal deposits and barrier island sands. The clays have low permeability, high water-holding capacity, high to very high swelling potential, poor drainage, low shear strength, and high plasticity.
      - 1) lithology Dominantly clayey with sand and silt of meander belt, levee, crevasse splay, and distributary origin.
      - 2) regional dip and gradient Coastward, 2.0 ft/mi for the Beaumont
    - c. Usable quality (<10,000 TDS) ground water
      - 1) depth to bottom 2500 ft.
      - 2) reference Surface casing depth in WDW-160 and Texas Department of Water Resources Report on Saline Aquifers, vol. 1 and 2.

- d. Regional ground water flow:
  - direction Gulfward, to the southeast. The influence of large local cones of depression around Texas City water wells is very pronounced.
  - 2) reference Texas Board of Water Engineers Bulletin 5502 and Bulletin 6303 and Harris - Galveston Coastal Subsidence District, Water Management Study, 1979
- e. Is the site located on the recharge area of a major/minor named aquifer (yes/no)? NO.
- f. Part B Permit Application, Geology Report, is located in Attachment 8 of the permit application. This consists of a 58 page Ground-Water Quality Assessment Plan and a series of borings contained in a report by McClelland Engineers, Inc.

#### 2. Site Hydrology

- a. Site Diagram Attachments A-6 a and b and A-7 (include locations of waste management area(s), borings, wells, lines of cross-sections)
- b. Site stratigraphy to depth of investigation 100 feet (complete this section for each encountered unit):

Unit - Top Clay Unit

Thickness - 30 - 32 feet

Description - Clay becoming sandy towards the bottom

Unit - Upper Transmissive Unit (Monitored Zone)

Thickness - 5 to 10 feet

Description - Sandy silt grading into a silty sand

Unit - Middle Clay Unit

Thickness - 25 to 35 feet

Description - Very stiff tan and light gray clay with sand and silt partings. Becoming sandier in the bottom eight feet.

Unit - Lower Sand Thickness - 12 to 24 feet

Description - Light gray medium sand with some shell fragments

Unit - Lower Clay Thickness - + 54 feet

Description - Stiff dark gray clay with some sand pockets

c. Cross-section(s) - Attachment A-7 -- Facility cross sections, lithology was checked against boring data.

d. Saturated zone(s) and Aquitard(s) (complete this section for each zone):

Unit - Top Clay
Depth encountered - Surface
Saturated thickness - Unknown
Potentiometric rise - Unknown

Confined/unconfined - Confining Layer

Hydraulic

conductivity (k)  $-2.7 \times 10^{-8}$  cm/sec (assumed from lab

values)

Vertical gradient (i) - Unknown

Unit - Upper Transmissive Unit

Depth encountered - 30 feet
Saturated thickness - Unknown
Potentiometric rise - Unknown
Confined/unconfined - Confined

Hydraulic

conductivity (k) - 2.9 X 10 -4 to 7.2 X 10 -3 cm/sec (calculated from field test)

Vertical gradient (i) - Unknown

Unit - Middle Clay Unit

Depth encountered - 40 feet Saturated thickness - Unknown Potentiometric rise - Unknown

Confined/unconfined - Confining Layer

Hydraulic

conductivity (k) - 10 -8 cm/sec (estimated from Freeze and Cherry, 1979)

Vertical gradient (i) - Unknown

Unit - Lower Sand
Depth encountered - 74 feet
Saturated thickness - Unknown
Potentiometric rise - Unknown
Confined/unconfined - Confined

Hydraulic

conductivity (k)  $-10^{-3}$  cm/sec (estimated from Freeze and

Cherry, 1979)

Vertical gradient (i) - Unknown

Unit - Lower Clay
Depth encountered - 96 feet
Saturated thickness - Unknown
Potentiometric rise - Unknown

Confined/unconfined - Confining Layer

Hydraulic

conductivity (k)  $-10^{-8}$  cm/sec (estimated from Freeze and

Cherry, 1979)

Vertical gradient (i) - Unknown

- e. Is first water-bearing zone identified in d. above in communication with deeper zone(s) (yes/no)? NO
- f. Is the aguitard(s) continuous beneath the site (yes/no)? YES
- g. If yes for e or f above, calculate rate of downward vertical migration and list results here: N/A

Vertical migration calculation can not be performed because no vertical gradients are known.

- h. Unit(s) monitored during interim status: Upper Transmissive Unit
- i. Unit(s) designated as uppermost aquifer in Part B: Upper Transmissive Unit Concur (yes/no)? YES
- 3. Monitor Well Construction
  - a. Well Construction Diagrams Attachment A-8
  - b. Table of Well Construction Details Attachment A-9
  - c. Do monitor well installation and development techniques and materials of construction satisfy the requirements of 31 TAC 335.112(a)(5)/40 CFR 265.91(c) (yes/no)? YES. If no, explain in comments.

Comments: Lithologic boring logs for installed wells were not available, but a written description was given. Other boring logs confirm the probable correct placement of the monitor wells in the upper transmissive zone. Wells apparently were not completed to the bottom of the upper transmissive zone, but constituents that are likely to be released to the ground water are soluble and should be detected by the constructed monitor well packing and screen.

#### 4. Site Ground-water Movement

- a. Potentiometric Surface Map(s) Attachments A-10 and A-11 a to d (Indicate inferred flow directions directly on map. Include several maps to show range of observed water level measurements.)
- b. Calculate minimum and maximum observed gradients (i) in units of feet/foot. Show on Attachment A-11 a and d (above) and list here: The gradient on both maps was the same. Only two wells can be used that are parallel to ground-water flow direction.

i<sub>ave</sub> - 0.0036 ft/ft

c. Calculations of average linear velocity (v) for gradients reported above, showing all assumptions, Attachment A-12

v<sub>min</sub> - 3.60 ft/yr

v<sub>max</sub> - 89.41 ft/yr

Comments: Attachment A-10 is the company map. Contours do not appear to honor the data. In general flow appears to be toward MW-3, a north-east direction not to the east as suggested on Attachment A-10. Only one well is downgradient of the WMA defined by Units 1 and 2. This system was taking approved in a letter dated 08-13-84 which reviewed the ground-water assessment report.

- 5. Monitor Well Placement
  - a. Upgradient/background monitor well(s)
    - 1) Confirmed as upgradient [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(1)] (yes/no)? YES. If no, explain in comments.
    - 2) Adequate to yield samples that are representative of background water quality [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(1)(i)] (yes/no)? YES. If no, explain in comments.
    - 3) Unaffected by the WMA [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(1)(ii)] (yes/no)? YES. If no, explain in comments. Indicate distance(s) of upgradient well(s) from the WMA: 780 ft

Comments: The upgradient well appears to reflect aquifer conditions without the marine influence that affects the other monitor wells near the intake canal.

- b. Downgradient/perimeter monitor wells
  - 1) Confirmed as downgradient and provide for immediate detection of hazardous waste or hazardous waste constituents that migrate from the WMA [31 TAC 335.112(a)(5)/40 CFR 265.91(a)(2)] (yes/no)? NO. If no, explain in comments. Indicate on Site Diagram, Attachment A-11 c above, lateral spacing of downgradient wells.
  - 2) Describe operator's justification for lateral spacing: Fulfills requirements, space limitations, and site physical constraints.
  - 3) Is the lateral spacing sufficient to satisfy the performance standard of 31 TAC 335.112(a)(5)/40 CFR 265.91(a)(2) (yes/no)? NO. If no, explain in comments.

4) Indicate on Site Diagram, Attachment A-11 d , and tabulate below the distances of downgradient wells from the edge of the WMA in the direction of ground-water flow:

Well				MV	<b>V-3</b>				<del></del>
Distance				170	) ft				
Time	max	=	47.2	years	*	min	=	1.90	years

Calculate ground-water travel time based on the average linear flow velocity, v (calculated in II.A.4. above). Assuming conservative transport, indicate with (\*) those wells that will not detect contaminates during the active life or post-closure care period of the WMA.

Comments: Only one of the three well that are designated by the company to be down gradient of Units 1 and 2 is downgradient according to Attachment A-10 and Attachments A-11 a to d. This system was that the approved in a letter dated 08-13-84 from the TDWR which reviewed the ground-water assessment report and by the approved closure plan.

c. Vertical placement - Indicate on cross-sections the screened and gravel-packed intervals of wells and tabulate below: Not indicated on attachment because no lithologic boring logs were provided for the monitor wells. Wells appear to be completed in the Upper Transmissive Unit.

Well	Screen Length	Gravel Pack Interval	Aquifer Thickness	S/U*
MW-2	5 ft	15 ft	5 to 10 ft	s
MW-3	5 ft	16 ft	5 to 10 ft	S
MW-4	5 ft	13 ft	5 to 10 ft	S

<sup>\*</sup>Explain in comments why vertical placement is unsatisfactory [31 TAC 335.112(a)(5)/40 CFR 265.91(c)]

Comments: Verbal description of the placement of the monitor wells in the Upper Transmissive Unit indicated that the bottom of the boring did not reach the bottom the the transmissive zone. Therefore the wells may not have been screened over the entire thickness of the transmissive zone. Constituents that are likely to be released to the ground water from the WMA are soluble and should be detected by the constructed monitor well packing and screen.

### B. Sampling Procedures

- 1. Facility Sampling Plan Answers to the following questions were derived from an in-office interview with the company. Field techniques were not observed because company is no longer sampling the monitor wells.
  - a. Is a Sampling Plan [31 TAC 335.112(a)(5)/40 CFR 265.92(a)] maintained at the facility (yes/no)? YES. Include a copy as Attachment B-1
  - b. Does the plan address the following items (yes/no)?
    - sample collection procedures yes
    - 2) sample preservation and shipment yes
    - 3) analytical procedures yes
    - 4) chain of custody procedures yes
  - c. List deficiencies/omissions/recommended changes: Decontamination of equipment used at more than one well was not discussed.
  - d. Does the facility follow the plan during sampling events (yes/no)? NO. If not, describe inconsistencies between the plan and described sampling procedures: A different chain of custody tag is used. Only two, one liter samples are taken to the lab, not the prescribed four samples.
- 2. Are wells equipped with (yes/no):
  - a. Caps yes
  - b. Lockable caps no
  - c. Annular seals yes (to prevent contamination from surface sources)

Comments: 1.3 foot concrete formed apron was present at the wells with three guard post about 3 feet high present.

3. Describe water level and total well depth measurement equipment and techniques: Total depth has not been taken since the wells were installed. Water level is taken with a popper attached to a knotted cotton rope that has tape with numbers to represent footage. Rope calibration is questionable and exact 0.1 footage measurement technique is not known.

#### 4. Well evacuation

a. Describe well evacuation equipment and techniques: A one gallon PVC bailer is used to evacuate three well volumes. A teflon bailer was available, but not used. Evacuation volume is calculated for each well from its standing water column. Bailers are counted to get the correct volume evacuated. One bailer is use for all wells at all facilities.

- b. Describe collection and disposal methods of bailed water: Water is disposed on the ground. Is the observed disposal method appropriate (yes/no)? YES, no known contamination is present.
- c. If the same equipment is used to evacuate each well, describe decontamination procedures: NONE Company assumes that by purging three well volumes, the bailer will be giving a representative sample. Cross contamination is not a concern to the company.

## 5. Sample collection

- a. Describe the sample collection equipment and techniques: Bailer is used to take sample. Bottle is rinsed with well water before sample is taken.
- b. If the same equipment is used to sample each well, describe decontamination procedures: NONE
- c. Indicate which samples are taken: Indicator parameters,  $SO_4$ , Na, Mn, Fe, Cl, and Phenol.

## 6. Field analytical procedures

a. Complete the following table for each field analysis;

<del></del>	Elapsed time*	Instrument	Field/ On-site lab
рН	5 to 10 min	Orion Research, Microprocessor - Ionizer 901	On-site lab
temperature	5 to 10 min	Same as above	On-site lab
Specific Conductance	5 to 10 min	Fisher Conductivity Meter Model 152	On-site lab

#### \*between sample extraction and parameter analysis

- b. Describe field filtration equipment and techniques: None in field. Lab does filter the samples but company does not know which parameters are filtered.
- c. Parameters filtered: Unknown

7. Complete the following table for the facility's sampling program:

Container	Preservative	Parameters	S/U*
1 liter glass	ice	Specific Conductance, TOC, TOX, Cl, Phenol, and SO <sub>4</sub>	ŭ
1 liter glass	ice, HNO <sub>3</sub>	Fe, Mn and Na	S

\*Explain in comments why the program is unsatisfactory

Comments: Incorrect preservation used for TOC (HCl to pH < 2), TOX (1 ml of 1.1M sodium sulfite), and Phenols ( $H_2SO_4$  to pH < 2).

8. Is the sampling methodology adequate for (NA/yes/no):

a.	Indicator parameters	-	no
b.	Quality parameters	_	no
c.	Drinking water parameters	-	NA
d.	Metals	-	yes
e.	Volatile organics	-	NA
f.	Floating immiscible organics	-	NA
g.	Dense immiscible organics	-	NA

- h. Describe possible problems: Incorrect preservation has been used throughout the monitoring program for TOC, TOX, and Phenols could result in bogus values for the indicator parameters and may have been responsible for either positive "t"-test failures or a failure to indicate contamination present in the ground water.
- 9. Describe Quality Assurance/Quality Control (QA/QC) procedures used in the facility's sampling program:
  - a. QA/QC at on-site lab pH meter is calibrated with standards at 7 and 9. Meter has a slope calibration and internal compensation for temperature. Calibration frequency is unknown and QA/QC for conductivity meter is unknown.
  - b. Field calibration of instruments None
  - c. Duplicate and/or spiked samples and blanks Contract lab has a complete program for lab instrumentation calibration. Field lab has to meet calibration standards set up by the Main HL&P lab for other analytical procedures.

- 10. Chain of Custody (C.O.C.) procedures:
  - a. Describe C.O.C. and shipping procedures:
    - 1) Example of C.O.C. Form or Tag Attachment B-2, both forms have been used.
    - 2) Example of Sample Identification Tag or Label Attachment B-2, same as C.O.C. form. Samples are cross-referenced to field notes, Attachment B-3.
    - 3) Comments: Sample tag is the same as the C.O.C. tag.
      Analysis request form is also the same tag. Tag is attached to the bottle with a rubber band. Bottle is not marked separately. Field notes are cross-referenced to the sample tag numbers (when present). No safety seal is used on the bottles or the ice chest. But the chest is locked up when not in site of collector. Only one person handles the samples from the time they are taken at the well head, at the on-site lab, and during transport to the contract lab.
  - b. Do the C.O.C. and shipping procedures minimize the possibility of tampering with the samples (yes/no)? YES
- 11. TWC sampling of monitor wells monitor wells were not co-sampled by the facility operator:
  - a. Person(s) who collected samples for:

Facility - Douglas B. Chin (observed for the facility)

TWC - Mary L. Ambrose and Marilyn C. Long

- b. Number of wells sampled 1
   Total number of RCRA wells 4
- c. TWC Sample Schedule Attachment B-4
- d. TWC Field Notes Attachment B-5

#### D. Records and Response

- 1. Are TWC self-reporting files up to date and complete (yes/no)? YES. If no, explain.
- 2. Is the Students t-test applied to data as required by 31 TAC 335.112(a)(5)/40 CFR 265.93(b) (yes/no)? YES. If no, explain.
- 3. Evaluate the facility's record-keeping and response using the Ground-water Monitoring Checklist. Include as Attachment D-1.
  - a. Has response to RCRA ground-water monitoring requirements been adequate (yes/no)? YES. If no, explain in comments.
  - b. Is facility record-keeping adequate (yes/no)? YES. If no, explain in comments.

#### Comments:

- 4. Summarize, in chronological order, activities and correspondence relating to the ground-water monitoring program.
- 11-16-81 Self implementing waver submitted as Geotechnical Investigation of Class I Disposal Ponds submitted. Two ponds were investigated, the Demineralizer Regenerant Collection (D.R.C.) and the Inorganic Metal Cleaning (I.M.C.) Collection Ponds. Findings, based on soil borings and laboratory test were: the ponds are located in clay to a depth of about 30 ft.; the clay is highly plastic and relatively impermeable with average coefficients of permeability
  - of about  $2.7 \times 10^{-8}$ ,  $8.2 \times 10^{-9}$ , and  $1.1 \times 10^{-9}$  cm/sec for deionized water, demineralizer regenerant, and inorganic metal cleaner, respectively; and the soil environment for the ponds is considered acceptable for Class I disposal ponds in accordance with the Texas Department of Water Resources Guidelines (Revised March 1, 1978) for unlined ponds. The reports concludes that the pond environments present a low potential for migration of waste.
- 12-17-81 Response to a request for additional 1980 Annual Waste Summary Reports indicates that the facility utilizes surface impoundments for storage and treatment of wastes, sludges that form. These wastes are retained per engineering design for several years, therefore the sludges are not wastes until they collect them for disposal.
- 05-25-82 Results of an industrial solid waste compliance inspection found that the ground-water monitoring program had not been implemented as required. A waiver or an alternative ground-water monitoring system document submitted by the company was found to be insufficient to comply with the wayer exception.

- 06-11-82 Copy of the FY82 RCRA inspection report along with the Low Migration Potential Demonstration are transmitted from the district to the Permits Division for evaluation.
- 06-22-82 Formal conference with company to discuss the proposed ground-water monitoring systems. HL&P realizes that the justification for waiver of monitoring had deficiencies, such as lack of information on the saturated zone, which would probably result in their denial by the department. HL&P intends to install monitor wells and wanted to discuss the well locations at the meeting.

HL&P stated that the uppermost extensive silt beneath the site is about -17 to -23 ft. msl. They proposed to monitor that silt as the uppermost aquifer, with monitor wells at the northwest, northeast, and southwest corners of the hazardous pond cluster. The unaffected well will be west of the cooling towers. the ponds are bordered on the north, east, and south sides by an inlet canal which could be 10 to 20 ft. deep and could, therefore, affect the wells. The area is subject to substantial subsidence. TDWR agreed to the well placement.

- 06-25-82 Response to May 25, 1982 correspondence. HL&P has elected to implement a groundwater monitoring system as discussed with the TDWR. Installation and development of the monitoring wells should be completed within 60 days for the date of the letter.
- 07- -82 Ground-water monitoring wells installed.
- 09-29-82 1st Quarter Analysis Groundwater Monitoring Report submitted.
- 12-08-82 Monitoring well information form for the facility submitted.
- 12-21-82 Third quarter ground-water monitoring report submitted.
- 01-17-83 Fourth quarter ground-water monitoring report submitted.
- 03-25-83 Ground-water Monitoring Program -- Information and First Year Replicate Measurements submitted.
- 05-24-83 Industrial solid waste compliance inspection report.
- 07-20-83 Notification of resampling due to statistically significant change. Results of resampling should be submitted by Sept. 1, 1983.
- 07-31-83 Results confirm a statistical difference.
- 08-28-83 Ground-water Quality Assessment Plan submitted.
- 08-31-83 2nd year semi-annual ground-water monitoring report. T-test

À

showed significant changes in wells 2 and 3 for conductivity, and well 4 for pH and TOC. Will be in contact the week of September 5, 1983 to arrange for a meeting to discuss submittal of ground-water assessment plans.

- 09-21-83 Informal technical conference covering proposed ground-water assessment. URM thinks the monitor wells do not yield representative samples: ponds contain low pH acidic waste (pH-2-3), some wells yield samples with pH = 10-11. Some wells were drilled with mud rotary method, which could also account for some irregularities. Wastes are hazardous for pH only. Company will submit an assessment plan. TDWR will respond in writing. Company complete the assessment within 60 days and submit a report.
- 11-12-83 Ground-water Quality Assessment Plan approved.
- 05-29-84 Ground-water Quality Assessment Plan, implementation studies submitted.
- 05-29-84 Assessment results submitted. The company intends to satisfy the closure performance standards such that no post-closure RCRA monitoring will be required.
- 07-10-84 Industrial solid waste compliance inspection report.
- 07-25-84 Meeting to clarify the requirements for ground-water monitoring pending closure of the hazardous waste facilities at the seven generation stations conducting RCRA monitoring. The use of the CMA false positive test to confirm "t" failures was approved.
- 08-13-84 Instruction for ground-water monitoring to meet requirements discussed on 07-25-84.
  - 1. Resume semi-annual sampling of the indicator evaluation program. All wells should be sampled for the indicator parameters and six water quality parameters;  $SO_A$ , Na, Mn, Fe,
    - Cl, and Phenol; prior to the end of the current semi-annual sampling period (Nov. 18, 1984).
  - 2. Continue the semi-annual sampling of the indicator evaluation program until closure is completed and certified. If the closure is accomplished such that the closure performance standards are achieved and no post-closure permit is required, the monitoring requirements of the hazardous waste rules will no longer apply. Should the closure performance standard not be achieved, additional monitoring will be required.
  - 3. Continue to sample all wells for the pH indicator parameter. In lieu of performing the Student's T test on pH data, analyze wells on a semi-annual basis for sulfate and report the results along with the indicator parameter results.

- 4. Maintain all monitor well in operable condition until their abandonment is authorized.
- 01-02-85 HL&P letter stating that closure plans for impoundments at the facility, which receive wastestreams that are hazardous solely on the basis of corrosivity, are currently being developed and will be submitted by March 15, 1985. Following completion of construction of concrete tanks to replace the existing surface impoundments, an Affidavits of Exclusion from Hazardous Waste Permitting Requirements will be submitted. A revised Part A will be submitted by March 15, 1985.
- O1-09-85 Annual ground-water monitoring report and brief ground-water quality assessment. There were positive "t" values for both pH and conductivity for all four wells. These significant differences were anticipated based on results reported in the Ground-water Quality Assessment Plan Implementation Report. The CMA false-positive test indicated no significant differences between the upgradient well and its background data, Monitor Wells 2, 3, and 4, and pH and conductivity values for Monitor Wells 2 and 4. The conductivity value for Monitor Well 3 reflects salt-water intrusion in the area of the well. The well is located immediately adjacent to the salt-water cooling water intake canal. There is salt water on three sides of the well.
- 02-11-85 Revised Part A application submitted.
- 02-11-85 Letter and closure plan submitted. Impoundments will be replaced with fiberglass-lined concrete tanks for storage prior to treatment of hazardous wastes.
- 03-12-85 Review letter and closure plan dated February 11, 1985 for closure of the demineralizer regenerant surface impoundment, inorganic metal cleaning surface impoundment, and mixing surface impoundment (i.e. demineralizer regenerant/non-oily floor drain mixing impoundment), identified as facility numbers 01, 02, and 06 on the notice of registration. TDWR letter request a public notice be published.
- 03-18-85 Industrial solid waste compliance inspection report.
- 04-12-85 Sworn affidavit from the Houston Chronicle documenting publication and a clipping of the published Notice of Receipt of Closure Plan Concerning Hazardous Waste Management Facilities submitted.
- 04-25-85 The closure plan needed modification before it can be approved. Several deficiencies were noted. HL&P was asked to submit, upon successful decontamination of the surface impoundment and complete closure certification, a notarized copy of the Affidavit of Exclusion to the executive director. They were also asked to determine if laboratory wastes were hazardous for reasons other that corrosivity.

- 05-06-85 Supplement of the closure plan submitted.
- 06-13-85 Notification of a change in waste management methods given along with a date of July 15, 1985 given for the beginning of closure provided TDWR gives approval of the modified closure plan.

  Closure should be completed on December 31, 1985.
- 06-28-85 Semiannual Groundwater Monitoring Report submitted. Positive "t" values were calculated for pH in all four monitor wells and for conductivity in Monitor Wells 1 and 3. These significant differences were anticipated based on the results presented in previous assessments. CMA test indicated no significant differences for pH in any of the wells, or for conductivity in Monitor Wells 1, 2, and 4. Monitor Well 3 still appears to be effected by the salt-water cooling water intake canal.
- 07-09-85 Additional closure plans to supplement the plans of 05-06-85 are submitted.
- 07-29-85 TDWR letter request a public notice of final facility closure be published for closure plan submitted May, 13 1985.
- 08-06-85 Approval of the closure plan submitted on February 11, May 6, and July 9, 1985. The closure plan was evaluated according to the applicable closure requirements of 31 TAC §335.286, pertaining to closure and post-closure care of surface impoundments and §335 Subchapter J, pertaining to general requirements for closure and post-closure care.
- 08-29-85 Sworn affidavits from the Houston Chronicle documenting publication and newspaper clipping of each Notice of Final Facility Closure submitted.
- 09-23-85 Approval of closure plan of May 13, 1985, covering the closure of one drum storage area.
- 11-05-85 Part B submitted.
- 11-27-85 Certification of closure for the inorganic metal cleaning surface impoundment by an independent registered professional engineer submitted. See Attachment D.3
- 01-15-86 Annual ground-water monitoring report submitted. Positive "t" values were calculated for pH in all four monitor wells, conductivity in MW-3, and TOH in MW-2 and MW-4. Following further statistical testing using the CMA test, no significant differences were found for pH in MW-1, MW-2, and MW-4. MW-3 is assumed to be effected by salt-water intrusion resulting in the conductivity failure. Because the sulfate concentration has decreased to 490 mg/L from 1,346 mg/L measured in April, seepage from the impoundments is unlikely. TOH readings are attributed to the high

concentration of chlorides present in the sample. Chloride values were 440 and 508 mg/L for MW-2 and MW-4, respectively, during the sampling period. In addition sulfate concentrations have decreased since the last sampling period. A complete Ground-Water Quality Assessment Plan is not warranted in this situation.

- 08-07-86 Semiannual Ground-Water Monitoring Report submitted. Positive "t" values were calculated for pH and conductivity in all four monitor wells. CMA test showed no significant differences being found for either indicator parameter for all monitor wells with the exception conductivity in MW-3. Attributed to salt-water intrusion.
- 08-12-86 Industrial solid waste inspection report.
- 08-13-86 Notice of deficiencies sent to company covering inspection of 08-11-86.
- 09-19-86 Addendum to industrial solid waste inspection report submitted.
- 12-23-86 On September 9, 1986, a closure inspection was conducted at a surface impoundment. A pH sample of the clay liner was obtained, which showed a pH of 8.24.
- 01-09-87 Annual report submitted. Positive "t" test values were calculated for pH in monitor wells MW-1, MW-2, and MW-3 and for conductivity in MW-3 and MW-4. A significant difference using the CMA False Positive test was detected for conductivity in MW-3. MW-3 has a high chloride concentration (6862 mg/L) which was influenced by possible salt-water intrusion.
- 02-20-87 Certification of closure under 31 TAC Section 335.216 and Affidavit of Exclusion from hazardous waste permitting submitted. Notice that surface impoundments identified as facility numbers 01 (Demineralizer Regenerant Impoundment ) and 06 (Demineralizer /Non-Oily Floor Drain Mixing Impoundment) on the Notice of Registration have been closed in accordance with the closure plan submitted by letter dated February 11, 1985, supplemented by letters dated May 13, 1985, June 13, 1985, and July 9, 1985 and approved by the TWC on August 6, 1985. Facility number 02 (Inorganic Metal Cleaning Impoundment) was certified to have been closed by letter of November 27, 1985. Certification is also made that the hazardous waste container storage area identified as facility number 04 on the Notice of Registration has been closed in accordance with the closure plan submitted on May 13, 1985 and approved by the TWC on September 23, 1985. These closures constitute full facility closure for all hazardous waste units, therefore, an Affidavit of Exclusion from Hazardous Waste Permitting is enclosed for processing. Certification is also made that the compacted clay liners for the demineralizer regenerant surface impoundment and the demineralizer regenerant/non-oily drain mixing surface impoundment meets the minimum criteria for class II pond soil liners. See Attachment D-2

# TWC Solid Waste Inspection Report (TAC 335.191-195)

## GROUND WATER MONITORING CHECKLIST

1. GROUND WATER MONITORING STATUS: Complete the table for each Waste Management Area (NMA):

TAMA	Description	Activity Status	Monitoring Status	Number of Wells
	Demineralizer Regenerant and Inorganic Metal Cleaning Imp.	closed	detection	y 3 p 1
2	Demineralizer/Non-oily Floor Drain Mixing Impoundment	closed	none	none U D
3	·			ם ט
4				ם ט

Give date of approval for waivers, alternate plan, or assessment plan, men

	as applicable: Assessment Plan approved 11-12-83, Result approved on 08-13-84	ts of	assess
2.	Provide a diagram locating each monitoring well and waste site(s depths, diameter and completion data on each well not included previous inspection. See Part A	s). Lis	t
٦.	Has the following been installed in the uppermost aquifer around each Waste Management Area(s):		***
	a. At least one hydraulically upgradient well?	YES_X	NO
	b. At least three hydraulically downgradient wells?  See comments.	YES	NO <sub>X</sub>
	c. Indicate WMA(s) that that are not compliant:		
	d. Describe possible problems on Comments Sheet.		
4.	If the WMA includes multiple waste management facilities, is each facility adequately monitored?  N/A	YES_X_	NO
5.	Does the facility have a GW Sampling and Analysis Plan?  Does it adequately address:	YES_X_	
	a. Sample collection procedures	YES_X_	NO
	b. Sample preservation and shipment	YES_X	NO
	c. Analytical procedures	YES X	
	d. Chain of custody procedures	YES_X_	NO
5.	Does the facility have an adequate		
	GW Quality Assessment Plan Outline?	YES_X_	NO
7.	If the company is performing an alternate groundwater monitoring program or a partial waiver monitoring program,	g	
	is an approved Sampling and Analysis Plan followed? $N/A \times N/A \times $	YES	NO
NO	TE: Complete the "GW Sampling Procedures Checklist", when observed well sampling procedures or co-sampling monitor wells at the		:y•

\*\*\* An entry in this column indicates corrective action/response is needed. Page 1 of 2

91/85

8.	Have records been kept of:			
	a. Analyses for ground water parameters?		YES x	NO
	b. Calculations of means and variances?		YES x	NO
	c. Water surface elevations taken at each well sampling ev	ent?	YES x	NO
	d. Calculations of significant differences?	N/A	YES x	NO
	e. Analyses of duplicate samples for contamination confirmation?	N/A	YES X	NO
	f. Analyses of samples taken as a result of implementing the Ground Water Quality Assessment Plan?	N/A	YES_x	NO
	g. Results of Ground Water Quality Assessment Plan?	N/A	YES x	NO
	(1). Rates of Migration?	N/A_x	YES	NO
	(2). Concentration of hazardous waste and/or constituents thereof?	N/A_x_	YES	NO
	(3). Analyses of quarterly ground water samples?	N/A <u>x</u>	YES	NO
	h. Copies of annual reports of the groundwater monitoring program?		YES_X	NO
9.	Are self-reporting data being submitted on the appropriate TWC forms?	٠.	YES_X	NO
NOI				
Con	ments: The monitoring systems were tacitly approved	d by the	e TDWR	in
a	letter dated 08-13-84 which reviewed the ground-wa	ater as	sessmen	t
re	port. All units have been certified closed accord	ding to	their	approve
cl	osure plans.			السد ورسيد المراجعية
-				
				<del></del>

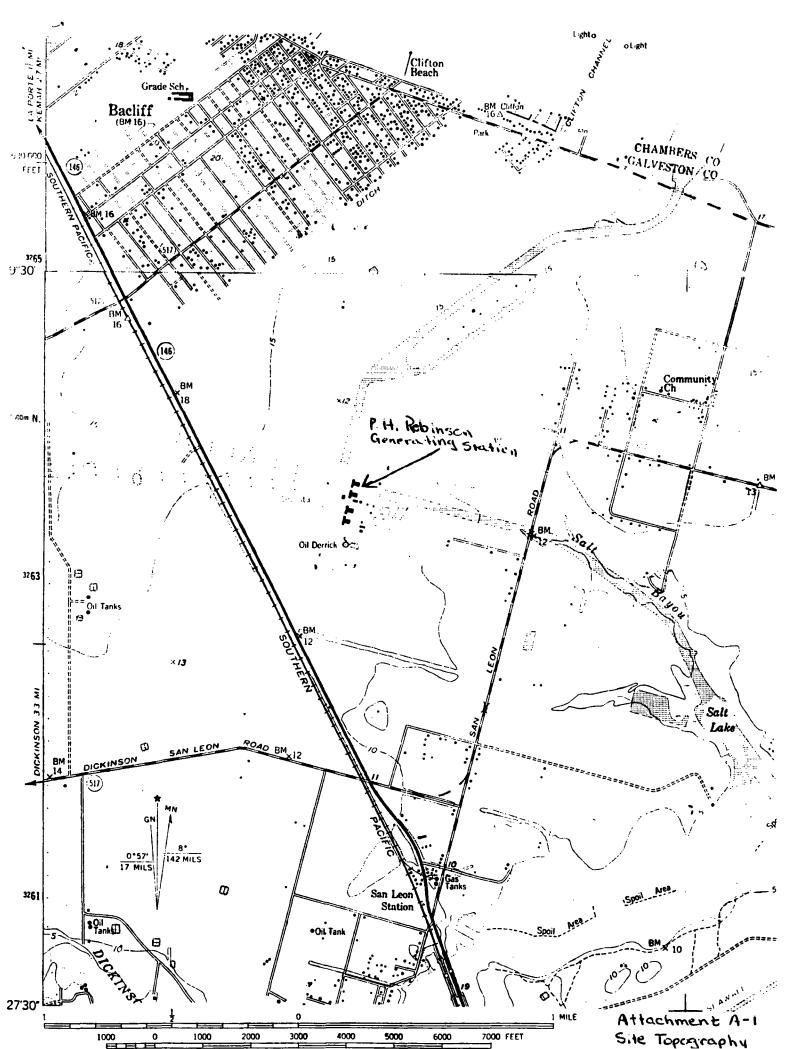
# GW SEMI-ANNUAL DETECTION MONITORING

# Waste Management Area(s) Demineralizer Regenerant and Inorganic Metal Cleaning Impoundments

			***
1.	Was the <b>first year</b> background sampling program adequately completed?	YES_x	NO
2.	Are wells sampled and analyzed annually for ground water quality parameters?	YES_x	NO
3.	a. Are wells sampled and analyzed semi-annually for contamination indicator parameters?	YES_X	NO
	b. Are 4 replicate measurements of indicator parameters made for each upgradient and downgradient well sample?	YES x	NO
4.	Are ground water surface elevations determined at each well for each sampling event?	YES_x	NO
5.	Were ground water surface elevations evaluated <u>annually</u> to determine whether monitoring wells are properly placed?	YES	NO_X_
6.	Were changes to the monitoring system necessary to maintain compliance with 335.192(a)?  YES	× NO	_
	If yes, describe in comments. None were made. System w	as tooti	approv
7.	on 08-13-84 Are statistical comparisons, using the Student's t-test at the 0.01 level of significance, performed?	AE2 X	3
	a. Between the initial background mean and mean of current upgradient well analyses for each contamination indicator parameter?	YES_x	NO
	b. Between the initial background mean and mean of current downgradient well analyses for each contamination indicator parameter?	YES_X	NO
8.	If there is more than one upgradient well, are all the backgreesulting in one background mean with variance for each contactor is each upgradient well mean and variance compared separagradient well analyses?  Circle the appropriate phrase. N/A	mination p	arameter
9.	Have significant increases (or pH decreases) in contamination indicator parameters been found in the:		
	a. Upgradient weils? YES_	K NO	
	b. If yes, did the company report the upgradient well change on the annual report form?	YES X	NO
	C. Downgradient wells? YES_	x NO	

\*\*\* An entry in this column indicates corrective action/response is needed.

10.	If significant increases (or pH decreases) in downgrad were detected, did the company:	lient wells
	a. Resample the "affected" well(s), split the sample in two, and re-analyze for the parameter(s) that showed significant difference?	N/A YES x NO
	b. Confirm the significant difference?	N/A YES x NO
	c. Notify the Executive Director within 7 days of confirmation?	N/A YES x NO
	d. Submit a certified Ground Water Quality Assessment Plan within 15 days of notifying the Executive Director?	N/A YES x NO
11.	Has the facility resumed detection monitoring at this WMA after determining in an assessment that no hazardous waste or constituents were detected in ground water?	N/A YES x NO
	b. If yes, when was detection monitoring resumed? 08-	13-84
	NOTE: Complete "GW Assessment Monitoring Checklist was resumed since the last inspection.	" <b>if detection monit</b> ori
12.	Has the facility modified the t-test procedure to reduce the occurence of "false positive" statistical indications?	YESNO_X
	<ul> <li>b. Describe changes in comments or include attachments</li> <li>Use the CMA test to confirm Student's "t"-t</li> <li>c. Date of TWC approval 7-25-84</li> </ul>	
13.	Has the facility substituted other parameters in place of pH, conductivity, TOC and/or TOX?	YES NO X
	b. List the parameters: sampled in addition, SO <sub>4</sub> .  Phenol.  c. Date of TWC approval 08-13-84	, Na, Mn, Fe, Cl, an
Com	ments:	
-		
-		



## TWC Solid Waste Inspection Report

CLOSURE-	in-PROGRESS	CHECKLES	r
CIAAMINI		~ * * * * * * * * * * * * * * * * * * *	

TWC	Reg. No	31638
Reg.	Eacility	No.

Тур	e of facility component: <u>Impoundments</u>	
1.	Is the facility component being closed a RCRA unit? all three	YES_x NO
2.	Type of closure: Full-Facility Closure x Partial Closure	***
3.	Has closure plan received TWC approval or final modification?  Date of approval: 08-29-85	N/A YES X NO
4.	Is this the last on-site facility to be closed which requires RCRA groundwater monitoring?  N/A	YES_X NO
5.	Has an approved <b>public notice</b> of closure been published? N/A  Date published: 08-29-85	
6.	Is a public hearing required?  Date of hearing:	YES X NO
7.	Has on-site closure work started?  Date work initiated: 08-85	YES_x NO
8.	Is closure work proceeding according to the work schedule in the approved closure plan?	N/AYES_x_NO
9.	Have 180 days elapsed since TWC approval of the closure plan?  N/A	YES X NO
	a. If Yes, Has TWC approved an extension period?	N/A YES x NO
10.	Was District Office notified of sampling event when complete removal (clean closure) of a Land Disposal facility was to have been accomplished?	N/AYES_x NO
11.	Were TWC samples taken to verify completion of closure?  Not all units NOTE: List chain-of-custody sample tag numbers in comments.  SW	YES x NO were sampled.
12.	Is the closure work completed?  Date of completion: 02-20-87	YES_x NO
13.	Has the closure certification been submitted to TWC? N/A Attach copy or explain. Date of certification: 02-20-87	YES x NO

<sup>\*\*\*</sup> An entry in this column indicates explanation/response is needed.

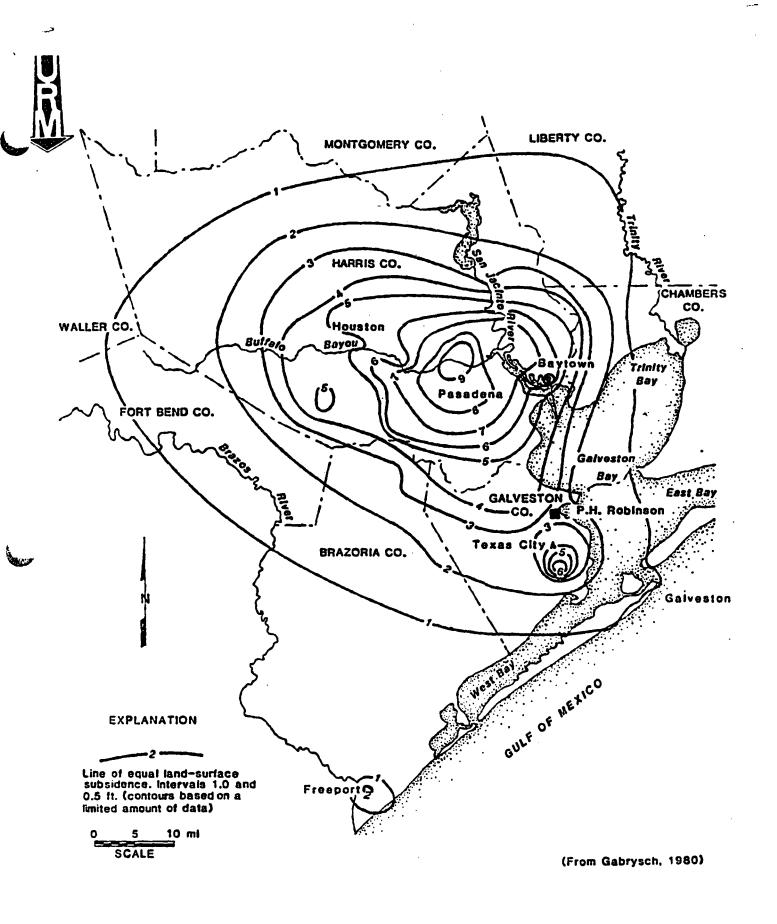


Figure 4. Land Surface Subsidence, 1906-78

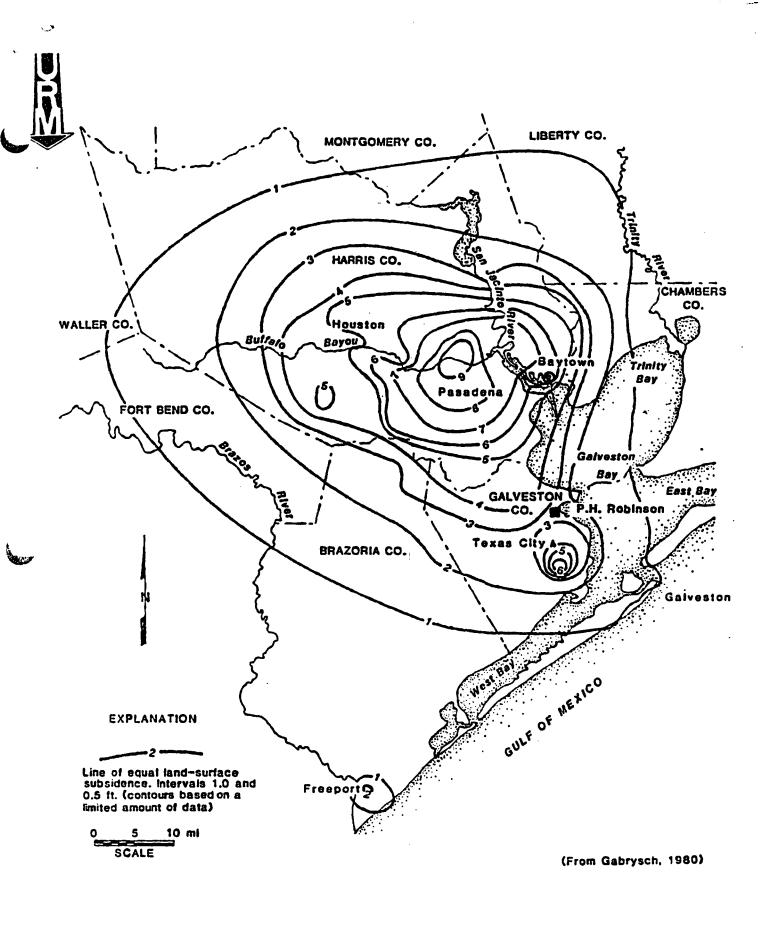


Figure 4. Land Surface Subsidence, 1906-78

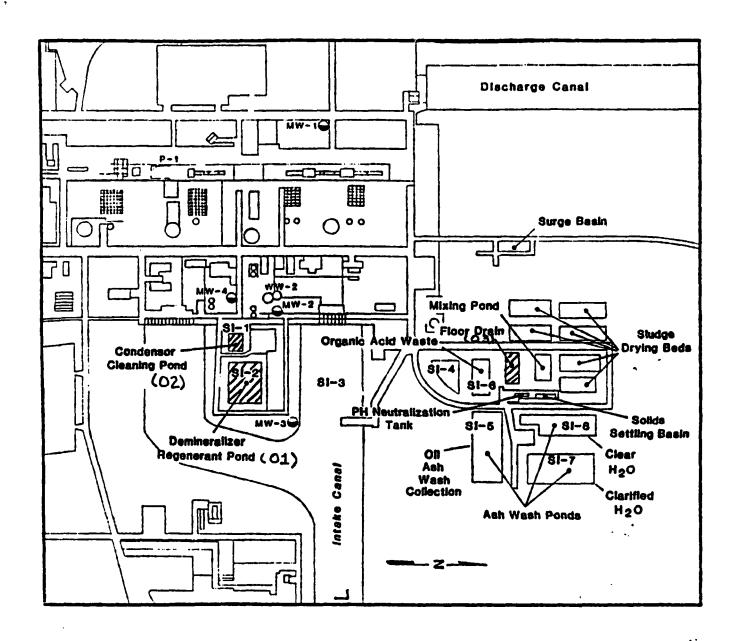
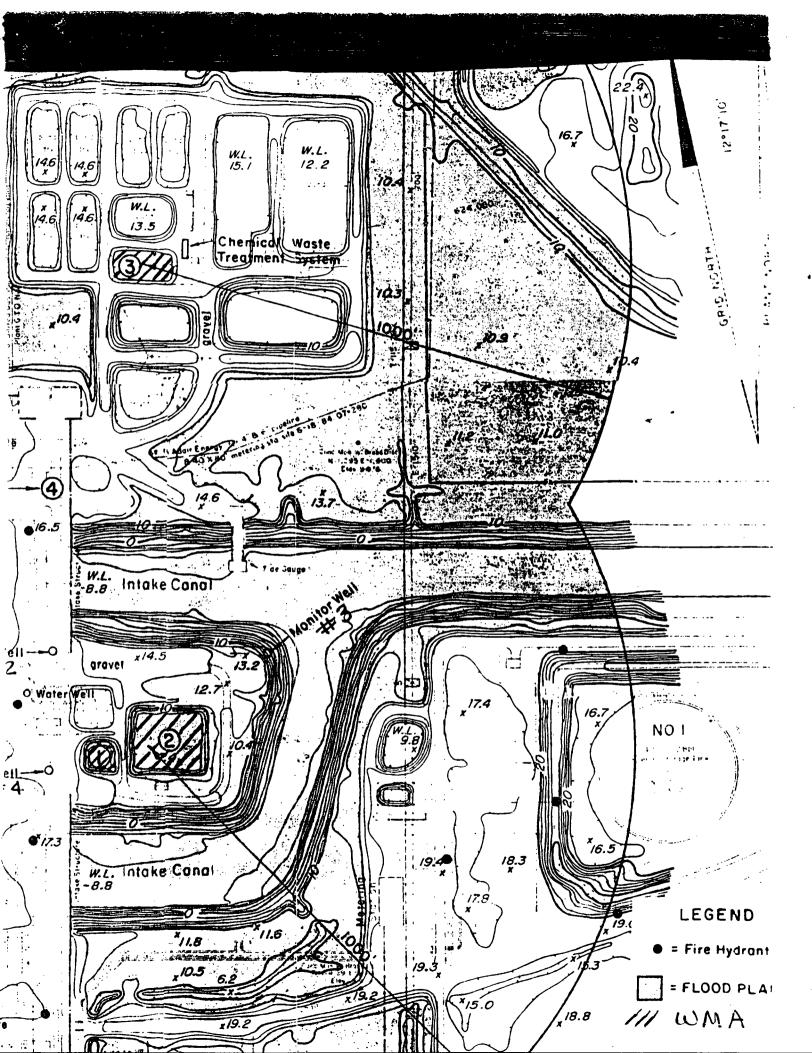
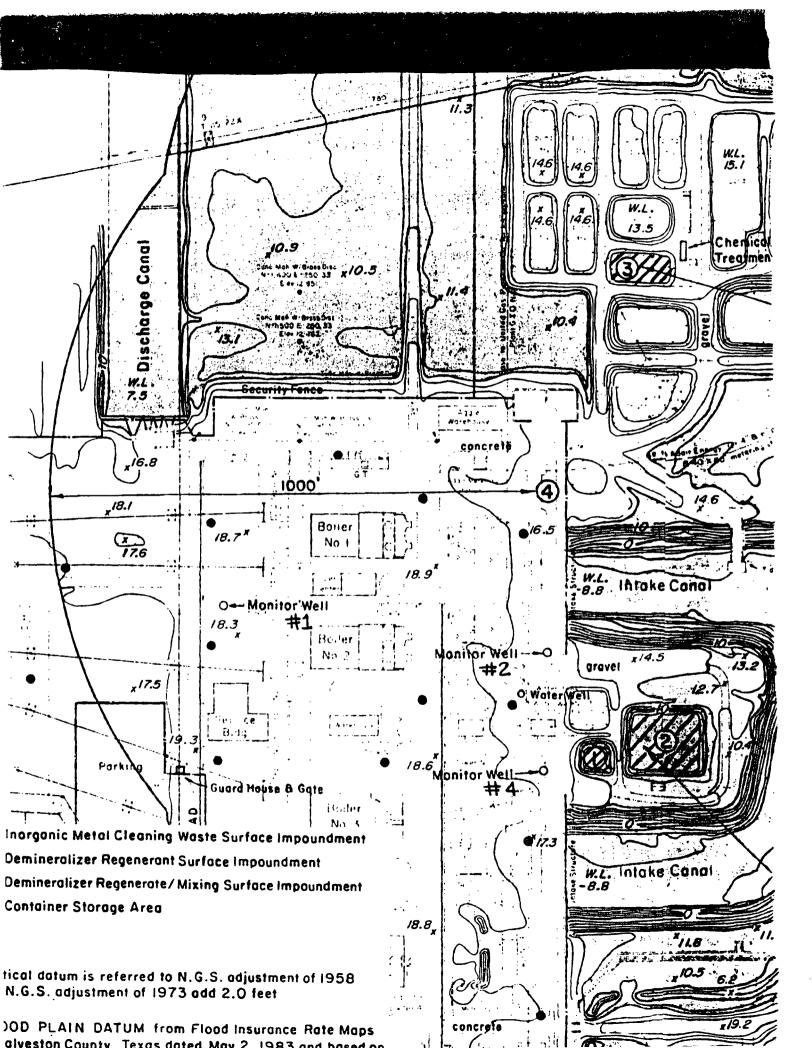
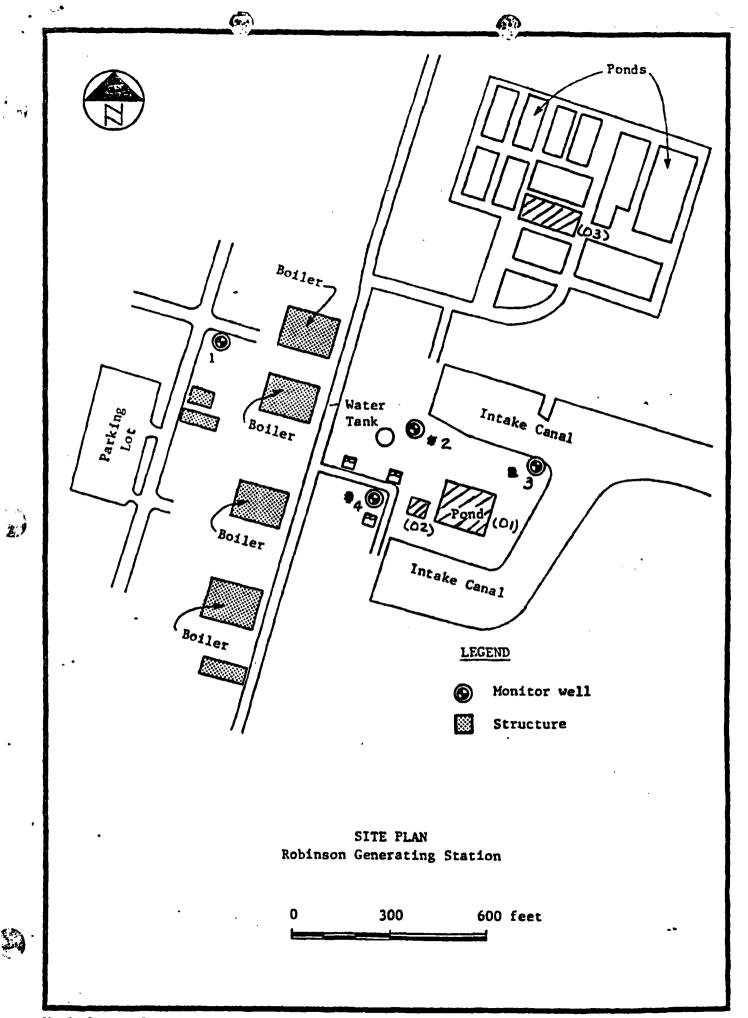


Figure 13. Location of Monitor Wells and Surface Impoundments at P.H. Robinson Generating Station

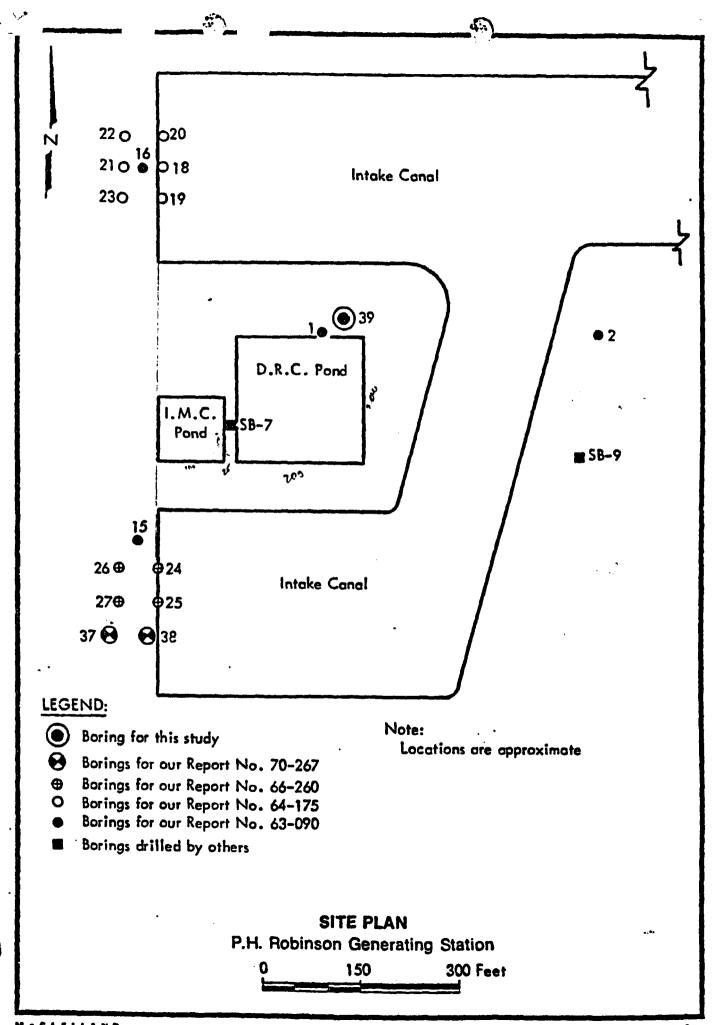
Attachment A-4 Site Diagram





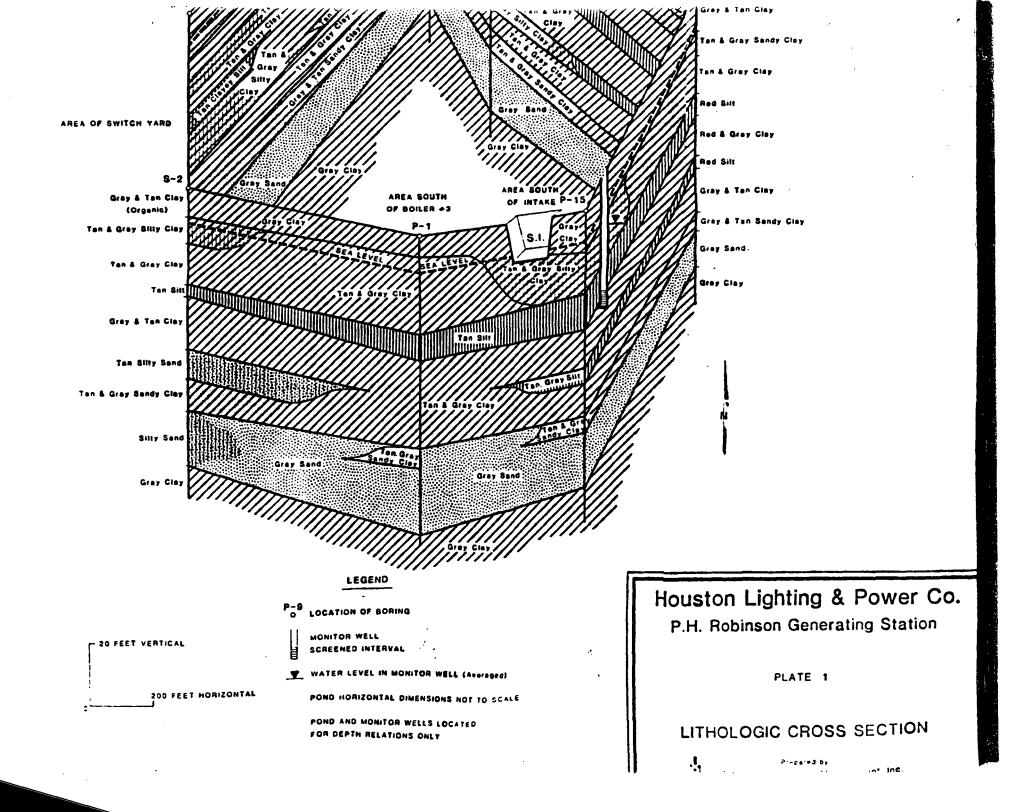


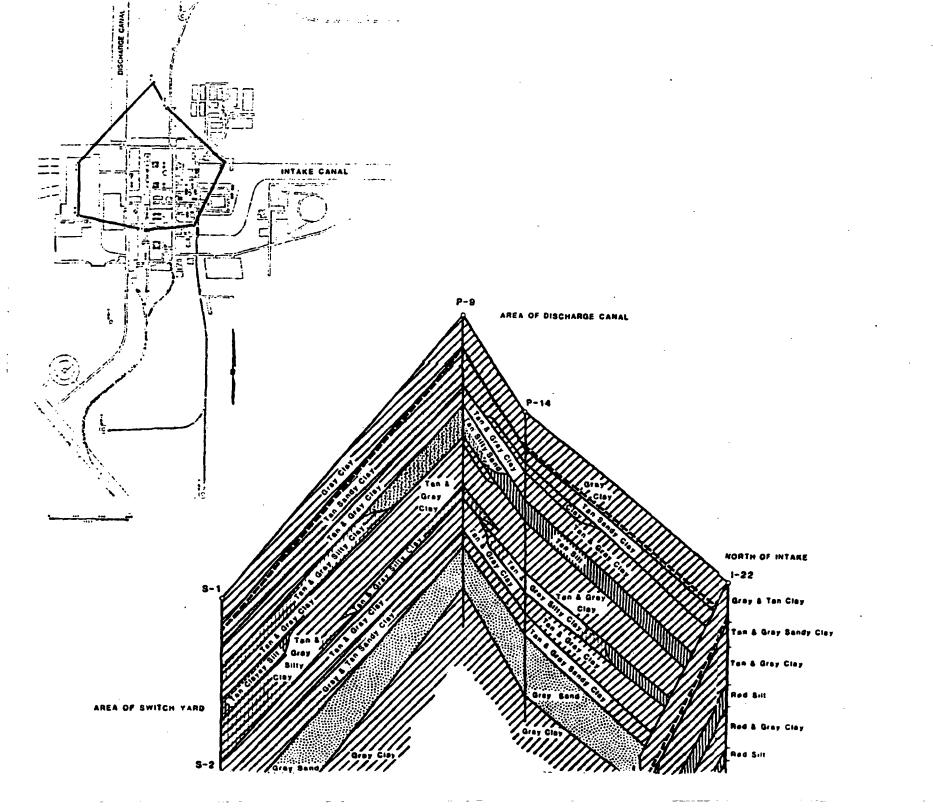
PLATE

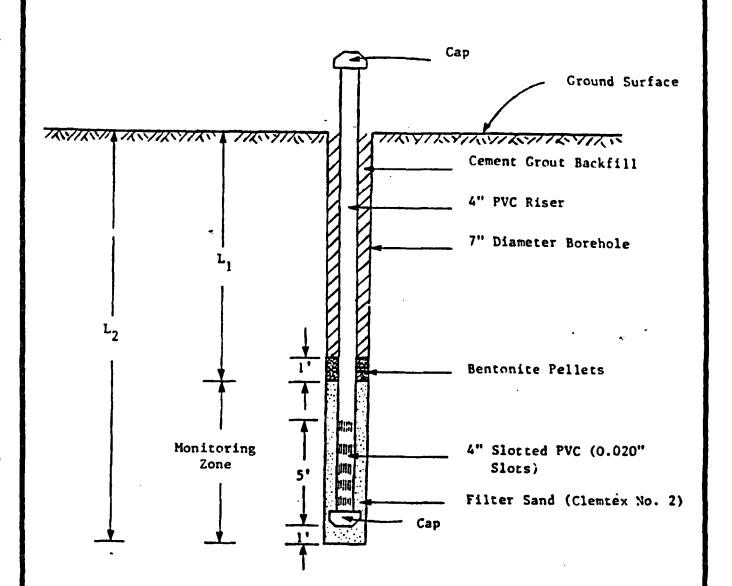


WALLEY WO

PLATE 1







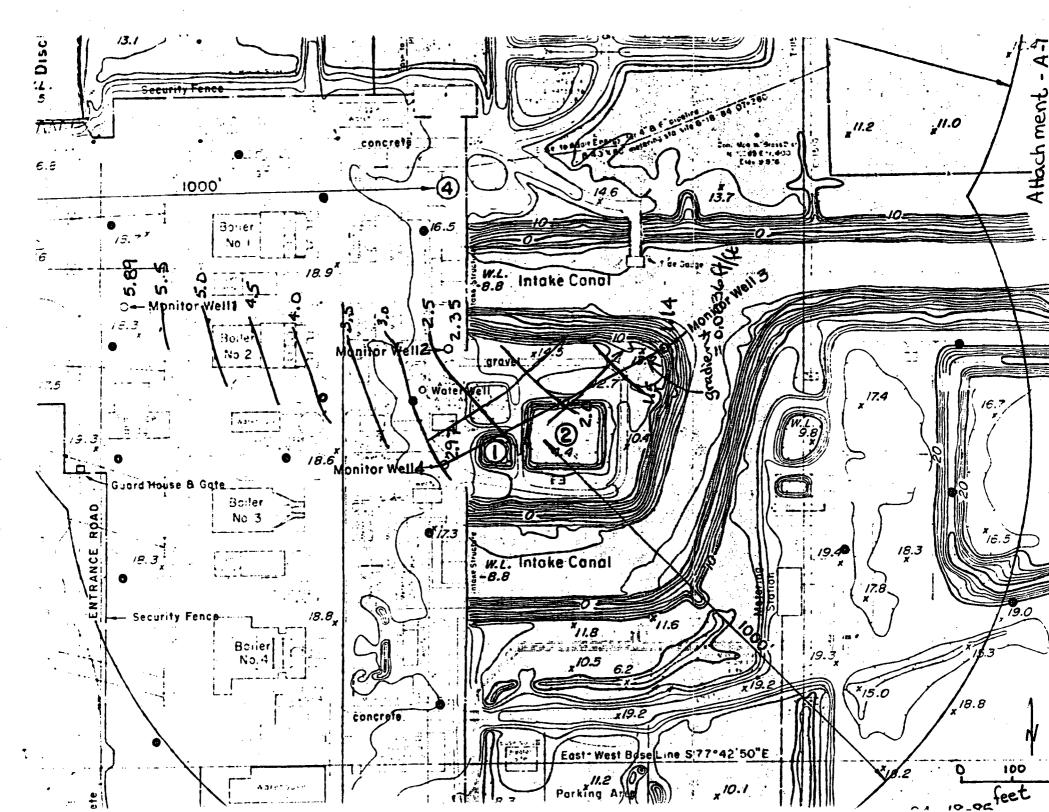
	Installation			Granular Layer		
Well No.	Date	L <sub>1</sub> , Ft	L <sub>2</sub> , Ft	Description	From, Ft	To, Ft
1	07-01-82	27	42.5	silty sand	37	42.5+
2	07-02-82	27	43	silty sand	36	43+
3	07-06-82	29	42	silty sand	36	42+
4	07-06-82	28	43	silty sand	35	43+

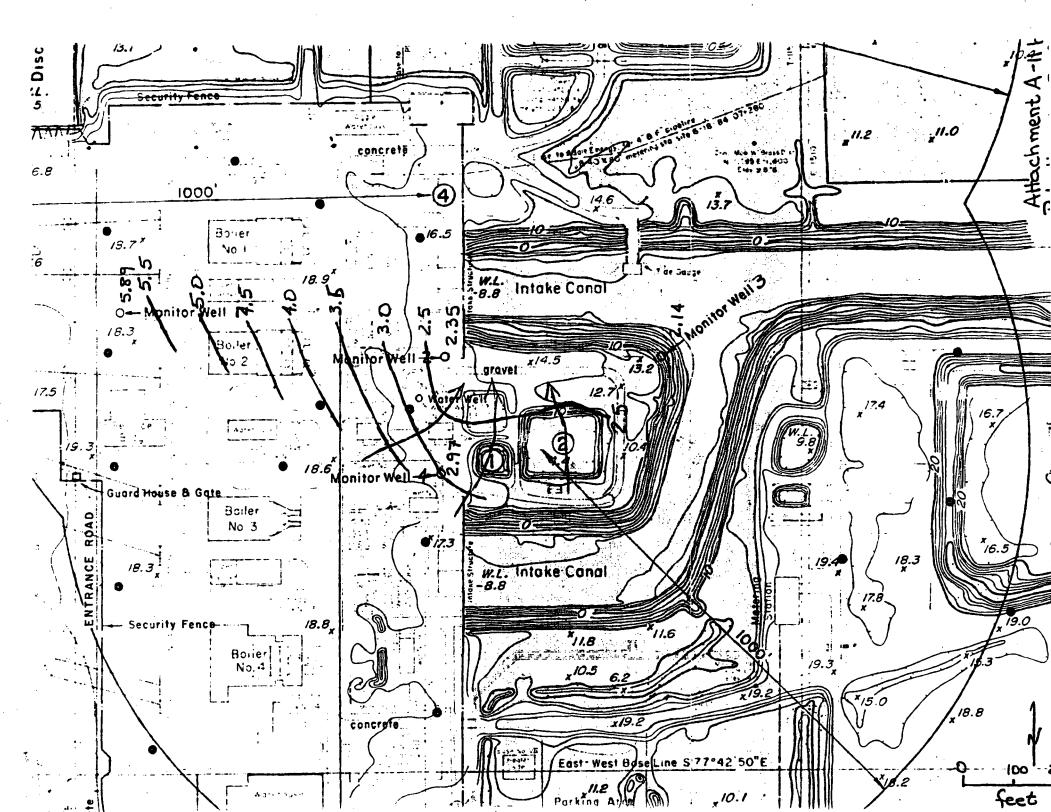
MONITOR WELL INSTALLATION DATA Robinson Generating Station

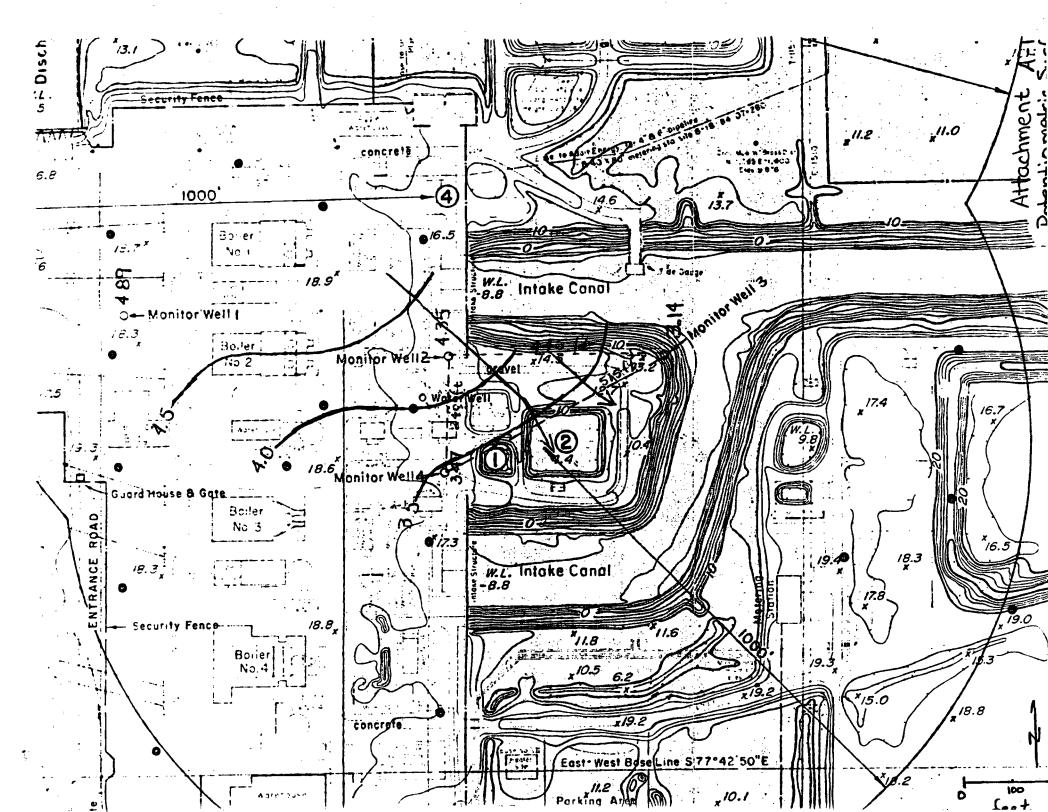
## ATTACHMENT A-9

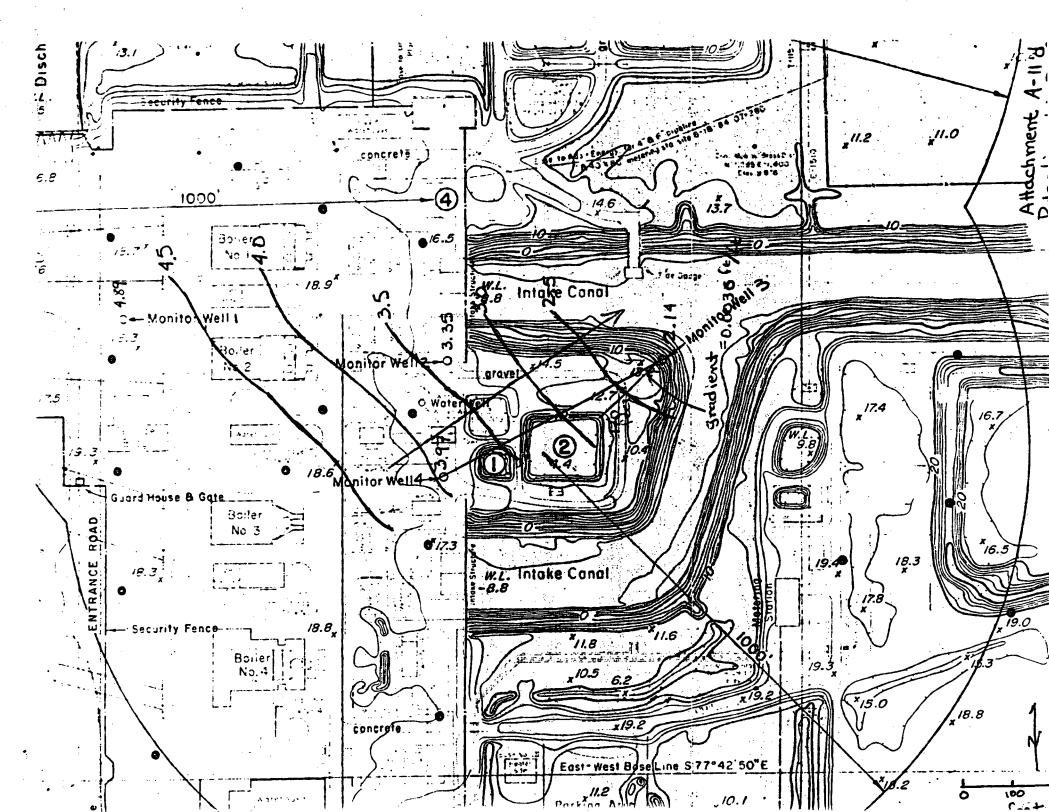
# Table of Well Construction Detail

Well Mamber	MM-1	r1W2	i4lv=3	Modern of			
Hole Diameter	_7 in	2 in	<u> 2 in </u>	7 10			
<u> Total Depth</u>	45.2 11	43 it	_43_ft	<u> 49 ft                                    </u>			
Drall Method	<u>wet rotally</u>	<u>wet_rutary</u>	_wet_rotery	weigntar/			
Date Driller	<u> 07-01-82                                     </u>	<u> (17-05-92                                    </u>	<u> </u>	<u> </u>			
Casino I.D.	<u> </u>	<u> </u>	4. 111	4 10			
Casing Type	9.40	PVC	PVC	. 13VC			
How Joined	N/A	<u> N/A                                   </u>	N/A	<u>N/A</u>			
Stick-up Length	NIA	NZO	NZA	_N/A			
I.O.C. (MSL)	18.19 ft	17.35 ft	14.14	17.97			
Ground Level (MSL)	N/9	N/A	N/A	N/A 1			
Capped/Lockable	Unknown	Unknown	<u>Unk nawn</u>	<u>Unknown</u> 1			
Surface Pag Size	1.3 ft dia.	1.3 ft dia.	1.3 ft dia.	1.3 ft dia			
Depth, bottom of				1			
Surface Seal	25 ft	27 ft	25 ft	28 ft   1			
Annulus Fill	Bentonite	Bentonité	Bentoni te	Bentonite I			
	pellets	pe.lets	pellets	<u>rellets 1</u>			
Depth, bottom of			·	1			
Annulus Seal	87 ft	28 ft	<u> 27 ft</u>	20 ft 1			
Depth, bettom of				1			
Gravel Pack	48.5+ ft	43+ ft	43+ ft	42- ft <u>1</u>			
Length				- 1			
Gravel, Pack	15.5 ft	15 ft	16 ft	1E ft V			
Size of Gravel			· • · · · · · · · · · · · · · · · · · ·				
<u>Paci.</u>	Folter Sand	Filter Sand	Filter Sand	Filter Sand			
Depth to top							
of Screen	39 <b>ft</b>	_37 ft	37 ft	37 ft <u>1</u>			
Screen I.D./Slot		4 in/ 0.02 in		4 in/ 0.02 in ]			
Screen Type	PVC	PVC	PVC	2007			
			ī fī				
<u> Sereen langin</u>				cap 1			
Blank Length	Cap the wa	cap	<u>cap</u>				
Development		owing the water and sediment out of the riser pipe with					
Method	compressed air. Wells were later redeveloped during the Ground-water Quality Assessment.						
The second secon	Ground-water L	Mailty Hasesome	M.C. and the second second				









#### Attachment A-12

#### Average Linear Velocity

V = Average Linear Velocity

 $K = Conductivity = 2.9 \times 10^{-4}$  to 7.2  $\times$  10<sup>-3</sup> cm/sec (from field test data)

i = Gradient = 0.0036 ft/ft

n = porsity = 0.30 (from Freeze and Cherry, 1979)

$$V_{min} = \frac{(2.9 \times 10^{-4} \text{ cm/sec})(0.0036 \text{ ft/ft})}{0.30} = \frac{(1.0348 \times 10^{6} \text{ cm/sec})}{(ft/yr)}$$

 $V_{min} = 3.60 \text{ ft/yr}$ 

$$(7.2 \times 10^{-3} \text{ cm/sec})(0.0036 \text{ ft/ft})$$
  $(1.0348 \times 10^6 \text{ cm/sec})$ 
 $V_{\text{max}} = 0.30$   $(\text{ft/yr})$ 

 $V_{max} = 89.41 \text{ ft/yr}$ 

## P.H. ROBINSON GENERATING STATION SAMPLE COLLECTION, PRESERVATION TECHIQUES, AND ANALYTICAL METHODS

Prepared for

Houston Lighting & Power Company
Houston, Texas



Underground Resource Management, Inc.

Austin, Texas



# P. H. ROBINSON GENERATING STATION SAMPLE COLLECTION, PRESERVATION TECHNIQUES, AND ANALYTICAL METHODS

Prepared for
Houston Lighting & Power Company
Houston, Texas

Prepared by Underground Resource Management, Inc. Austin, Texas

January, 1985



Control of the state of the sta

I. Sample Collection and Preservation



#### INTRODUCTION

This groundwater sampling and analysis plan has been prepared in response to Texas Administrative Code 335.193(a), and contains the required procedures and techniques for the collection, preservation, and shipment of samples. Also identified within the plan are analytical procedures and chain-of-custody control.



#### A. Analysis Categories

Section 335.193(b) (2) and (3) of the Texas Department of Water Resources Industrial Solid Waste Regulations governing hazardous waste management facilities divides required groundwater analysis parameters into two groups for annual groundwater monitoring.

The two groups of parameters are as follows:

Contamination Indicator Parameters (IP): These parameters are used as indicators of groundwater contamination, and include conductivity, pH, total organic carbon and total organic halogen, and are sampled semiannually.

Contamination indicator parameters require quadruplicate samples from each monitor well.

<u>Groundwater Quality Indicator Parameters (GQIP)</u>: These parameters aid in the establishment of groundwater quality. This list includes chloride, iron, manganese, phenol, sodium, and sulfate, and are sampled annually.

In addition, water level measurements must be performed each time a well is sampled.

#### B. Sample Labeling and Shipment

Proper sample labeling is the first step in chain-of-custody control and quality assurance. It is important that all requested information be supplied correctly, as this will be the means of identifying a particular set of data. Erroneous sample identification may lead to false conclusions concerning groundwater conditions.



Pre-printed labels that are attached to each sample bottle should be used. These labels, when properly completed, supply all necessary sample information needed to ensure proper chain-of-custody and sample management. The label should contain space for the following information:

- 1. Facility name.
- 2. Well number.
- 3. Date and time.
- 4. Water level measurement value.
- 5. Number of well volumes bailed.
- 6. Name of sample.
- 7. Block for laboratory identification number.
- 8. Comments.
- 9. Field pH reading.

Shipment of samples should take into account maintenance of chain-of-custody records, fragility, and time. If using an out-of-town laboratory, a carrier that will handle the package a minimum number of times is preferred, thus ensuring package (and seal) integrity. A carrier should be selected that will handle fragile sample bottles carefully to minimize breakage. Also, time-dependent samples should be shipped to the laboratory by the fastest method possible. A table of allowable holding times is listed below:

Parameter	Holding Time
Conductivity	28 days
pH	2 hours
Chloride	28 days
Sulfate	28 days
Iron	6 months
Phenols	28 days
TOC	28 days
TOX	7 days

<sup>\*</sup> USEPA, Federal Register 44, No. 243, December 18, 1979



Because of its limited holding time, it is recommended that pH be analyzed in the field as well as in the laboratory.

#### C. Sampling Procedures and Preservation

Sample collection is an important part of the total analytical protocol, for analytical data can be no better than the sample being analyzed. Thus, great attention should be paid to proper sample collection and preservation.

Proper sample containers and preservatives should be assembled prior to sampling. Table 1 lists the sample bottles and preservation techniques required for groundwater sampling.

In addition to the proper sample containers, the following equipment should be taken to the field for sampling:

Water level measurements instrument such as electrical water level tape or chalked steel tape.

Wrenches and assorted tools, cleaned to prevent sample contamination.

Marking pens.

Field notebook and pencil.

Sufficient rope for all wells (Use of the same rope in more than one well can cause cross contamination and should be avoided).

Gloves and safety equipment, as needed.

Engineering rule readable to 0.01 foot.

Field pH kit.

Chain-of-Custody forms (see Table 2 for example).

Upon arrival at a monitor well, note any defects in the well that might require repair.



TABLE 1
Sample Bottles and Preservation Techniques

Bottle	Preservation	<u>Parameters</u>
1-liter plastic	refrigerate	pH, conductivity, inorganics, solids
1-liter glass with Teflon-lined cap	5 mL H <sub>3</sub> PO <sub>4</sub> 1 g CuSO <sub>4</sub>	Pheno1
250 mL amber glass Teflon-lined cap	refrigerate	TOC, TOX
250 mL plastic	2 mL HNO <sub>3</sub>	· Iron*

\*Filter sample prior to preservation. This may be difficult under field conditions and frequently such samples are collected and transported to the laboratory without the addition of HNO3. The laboratory can filter and then preserve. However, this should only be conducted when a sample can be collected, chilled, and delivered to the lab in the same day.



DATE

TIME

### TABLE 2 Chain-of-Custody Record

SAMPLE DESCRIPTION

LOCATION AND TYPE

	•	
	i	
•		
,		
·	·	
lector Name	<del></del>	Telephone
		Telephone
		Telephone
		Telephone
eld Notes		Telephone
eld Notes  AIN-OF-POSSESSION		Telephone
eld Notes  AIN-OF-POSSESSION  Name  Name	Company	Date
eld Notes  AIN-OF-POSSESSION  Name	Company	Date



Using the water level measuring instrument (E-line or equivalent), measure the water level and record the value to the closest 0.01 foot. Withdraw and clean the level indicator, noting any foreign matter that might be clinging to the probe.

Calculate the amount of water in the well casing by using the following formula:

(well depth\* - water level) = water column, feet water column  $\times$  0.65 = well volume, gallons

\*See Table 3 for well depth.

- A minimum of three well volumes should be removed (bailed) from the well prior to sampling. Dumping the bailer into a 5-gallon pail is an easy way to keep a record of the number of gallons removed. If the well bails off (the water level fails to recover sufficiently in the wellbore to permit additional water removal over a thirty minute period) after one well volume, allow the well to recover near static water level and then sample. This should be done only on those wells that can be bailed off. All other wells should be bailed at least three casing volumes to clear any wellbore stagnation. Discard the bailed water.
- After bailing the well, allow the well to recover, i.e. the water level to return to near to static, pre-bailing level. Assemble and label all necessary bottles, making sure to record all required data (date, time, well name, etc.) on each bottle.
- Fill all bottles with samples. Transfer the sample directly from the bailer to the bottle. This will help minimize cross-



TABLE 3

P. H. Robinson Monitor Well Data

Monitor Well Number	Total Depth <sup>1</sup>	Top of Casing <sup>2</sup>	Sample Top Ft. MSL	Intervals <sup>3</sup> Bottom Ft. MSL
MW-1	45.2	18.89	-20.11	-25.31
MW-2	43	17.35	-19.65	-24.65
MW-3	43	14.14	-22.86	-27.86
MW - 4	43	17.97	-19.03	-24.03

- 1. Subtract water level measurement from this value to calculate water column. Total depth of well is from the top of the casing to the bottom of the well.
- 2. Subtract water level measurement from this value to derive number for block 47 in TDWR-0150 (Revised 5-29-84). The top of casing is reported in Ft. MSL.
- 3. Record top and bottom numbers in blocks 64 and 81 of TDWR Form Number TDWR-0150.



contamination of samples. Take care to observe any sample requirements, i.e. do not leave headspace in TOC/TOX bottle, etc. Frequently, difficulty may be encountered in direct transfer from bailer to bottles, especially if only one person is sampling. In these instances, the sample can be poured from the bailer to a "clean" plastic bucket with a pouring spout, and then transferred to the sample bottles (If a plastic bucket is used, it should be rinsed with deionized water first and then with a small quantity of the water to be sampled. Such rinses should be discarded before sample collection begins.)

- Place the sample bottles in a shipping container and chill with ice. Return samples to the laboratory as soon as possible.
- Do not lay the bailer in the grass. It should be set on tin foil or across the hood of a vehicle. The bailer should be rinsed with deionized water between monitor wells to avoid any potential cross contamination. The best system is to have a bailer for each well, and hang the bailer in the well when not in use. Dedicated bailers ensure there is no cross contamination.
- Record all field observations in a bound field notebook such as a K & E Level book (82-0048) or a similar type of sturdy field book.



II. Analytical Methods



#### ANALYTICAL METHODS

All samples obtained for monitoring should be analyzed in accordance with approved EPA methods which are listed below.

Parameter	Method	Reference	Description
Conductivity	120.1	1	Conductometric
рН	150.1	1	Electrometric
Chloride	325.3	1	Titrimetric
Sulfate	375.4	1	Turbidimetric -
Iron	236.1	1	AA/Aspiration
Manganese	243.1	1	AA/Aspiration
Sodium	273.1	1	AA/Aspiration
Pheno1	420.1	· 1	Colorimetric
Total Organic Carbon	415.1	1	Combustion/IR
Total Organic Halogen	450.1	2	Combustion/HECD

- 1. EPA 600/4-79-020, March 1979, "Methods for Chemical Analysis of Water and Wastes".
- 2. EPA Interim Method, November, 1980, "Interim Method for Total Organic Halide".

HL&P ENVIR	ONMENTAL SOLID WASTE SAMPLE		eionege	1	†	PANNEE D H'SO HCL
FACILITY:	DATE:	bet yd b etete i	eniupen one lese			O VDDED   HNO
SAMPLE TYPE:	TIME:	noitem	otni IIA	SISATAN	IA 40 34YT	□ NONE
LOCATION:	TYPE OF ANALYSIS:	<u> </u>	UN		SAMPLER	
METHOD:	······································				NAME OF	LOCATION:
NAME OF SAMPLER:				1	TIME:	
CONTAINER TYPE:			<del> </del>		FLOW:	DATE
VOLUMES BAILED:	FIELD pH:				·	
PRESERVATION TYPE:	TEMPERATURE:	8	2		TAIHS	:TNAJ9
	No. 0657  ATORY PERSONNEL ONLY RITE ON THIS SIDE OF CARD	LABOI	RATORY N	AME:		
• <del></del>		DATE	RECEIVED	) <b>:</b>		
Laboratory no.		LABO	RATORY N	UMBER:		
		TAGS	TO BE RE	MOVED BY LA	AB PERSONNE	EL AND SENT WITH
NOTE: TAGS TO BE R ANALYSIS TO:	EMOVED BY LAS PERSONNEL AND SENT WITH D. S. CHIN HOUSTON LIBITING & POWER CD. ENVIRONMENTAL PROTECTION	ANAL	rsis to:	P. O. BOX	ENTAL PROTE	OWER COMPANY ECTION DEPT.

Attachment

10-70-86 PAR SEMI-ADDIOL MONITORING
Clear, Narm

PAW Octh Mather Togorio, Souls Not your tapporter

1 ns 141=11 60gal 500 12:00 M

2 ns 141=11 60gal 553 12:00 M

3 ns 121 -11 60gal 551 1:25 mm

Note have wells 47-45' deep

Houlto bail (cip time each wells)

1 2 and

1 3 and

1 3 and

1 4 an

#### ATTACHMENT B-4

#### Texas Water Commission Sample Schedule

MW-03	Appeara	ance=Clear to mu	o°C pH=6.51 SC=27000 addy Water Depth=11 ft dor=None Date=03-14-87	
C.O.C. Sample		GW03457	HW10663	
Analys	is	Major Ions	Metals	

Type of 1 Qt Plastic 1 Qt Plastic Container

Preservative

1 Qt Plastic 1 Qt Plastic 1 Qt Plastic 2, and ice

March 16, 1987

HL+P P.H. Robinson Generating Station

in operation late 1960's

Mixed regenerate water water + non-oily

could not prove pHzelected to close as a hazardous imprendment

See notes on computer print out for in office interview

With Richard BYE and Doug Chin

MW-3 -> Sampled by M. Long & M. Ambrose with help of D. Chin.

GW 03457 3:25

HM 10663 3:25 Time started bailing = 2:30

Time finished bailing = 3:20

C = 20°

Depth to water = 11 ft

TD = 43 reported 45.5 ft

Cond = 27000

Water standing = 32

Need to evacuate 62 gallons

# of 3 gal backets : (21 buckets to be purged)

UM LYN HM HU / Capped but not locked

PH was 70 +4.01 at 22°C

mont

Q

Stick up 1.93 ft

356

wells labeled with the metal tag that is hard to read The Light COMPANY Houston Lighting & Power P.O. Box 1700

bcc: L. B. Korrigan, Jr.

D. R. Betterton

D. G. Tees

\*R. B. McDonald (\*w/attachment -RCRA File #14)

February 20, 1987 to be sent at

Mr. Minor Hibbs Hazardous & Solid Waste Division Texas Water Commission Post Office Box 13087 Capitol Station Austin, Texas 78711

CERTIFICATION OF CLOSURE (31 TAC, SECTION 335.216) SUBJECT:

AFFIDAVIT OF EXCLUSION FROM HAZARDOUS WASTE PERMITTING

P. H. ROBINSON GENERATING STATION, TWC NO. 31638

Dear Mr. Hibbs:

Certification is hereby made that the hazardous waste surface impoundments identified as facility numbers 01 and 06 on the Notice of Registration have been closed in accordance with the closure plan submitted by letter dated February 11, 1985, supplemented by letters dated May 13, 1985, June 13, 1985, and July 9, 1985 and approved by the TWC on August 6, 1985. Facility number 02 was certified to have been closed by letter of November 27, 1985. Attached is a certification of closure for facility numbers 01 and 06 by an independent registered professional engineer.

As indicated in earlier correspondence, certification is also hereby made that the hazardous waste container storage area identified as facility number 04 on the Notice of Registration has been closed in accordance with the closure plan submitted on May 13, 1985 and approved by the TWC on September 23, 1985. The attached includes a certification of closing for this area by an independent registered professional engineer.

These closures constitute full facility closure of all hazardous waste units at the P. H. Robinson Station. Therefore, a signed and notarized Affidavit of Exclusion from Hazardous Waste Permitting is enclosed for your processing.

Class I hazardous wastes identified on the facility's current waste registration are handled as follows:

Spent Solvents - container storage onsite for less than 90 days; shipment offsite for disposal.

Paint Thinner - container storage onsite for less than 90 days; shipment offsite for disposal.

Attachment D-2

Houston Lighting & Power Company

Mr. Minor Hibbs February 20, 1987 Page 2

<u>Paint Wastes</u> - container storage onsite for less than 90 days; shipment offsite for disposal.

<u>Paint Stripper</u> - container storage onsite for less than 90 days; shipment offsite for disposal.

<u>Demineralizer Acid & Base Regenerant Wastewater</u> - routed to a lined concrete tank prior to treatment and discharge as per NPDES permit requirements. The tank meets the RCRA permit exemption requirements as defined in 40 CFR 264.1.

Sodium Hydroxide Contaminated Material - container storage onsite for less than 90 days; shipment offsite for disposal.

Sandblasting Grit - container storage onsite for less than 90 days; shipment offsite for disposal.

Mercury Contaminated Waste - container storage onsite for less than 90 days; shipment offsite for disposal.

Acid Contaminated Material - container storage onsite for less than 90 days; shipment offsite for disposal.

If you have any questions regarding this matter, please contact Mr. D. B. Chin at 713/922-2203.

Sincerely,

F. McGudre

Manager, Environmental Protection Department

DBC/jcc:L-5
Attachment

cc: Texas Water Commission, Southeast Region (Deer Park, Texas)

#### AFFIDAVIT OF EXCLUSION FROM HAZARDOUS WASTE PERMITTING REQUIREMENT

	·	
Registrati	ion No. <u>31638</u>	
Applicatio	on No.	
Facility N	(Dept. Use Only)	Station
County of	Harris	
•		
	orrigan, Jr. President	being duly sworn, deposes and says:
	rresident sil Plant Engineering & Construction	of Houston Lighting & Power Compa
·	itle (Owner or Principal Officer)	Facility Owner
P. U	D. Box 1700, Houston, Texas 77001 and Address	·
This affid	lavit is being executed for the purp	ose of notifying the Executive Director
of the Tex	as Department of Water Resources th	at the named facility does not require
a hazardou:	s waste permit because:	
Check appro	opriate box(es):	
	No hazardous waste is stored, proce	ssed or disposed on-site
	The facility qualifies for the "Acc Texas Administrative Code, Section	umulation Time" storage exclusion of 335.69
	The facility qualifies for the "Sma Texas Administrative Code, Section	
	The facility qualifies for the "Eleof Texas Administrative Code, Section	mentary Neutralization Unit" exclusion on 335.2(f)
	The facility qualifies for the "Was Texas Administrative Code, Section :	tewater Treatment Unit" exclusion of 335.2(f)
	Other (Explain with an attachment a	nd reference TDWR rule)
	e <del>n de</del>	Signature
Swann to be	ofono me this	
Sworn to be	day ofarch. 1987.	Notary Public in and for
	, _2	Lanes County, Teras
	MARILYNN M. WEBER	

My Commission Expires 4-27-88

#### CERTIFICATION OF CLOSURE

OF THE

DEMINERALIZER REGENERANT SURFACE IMPOUNDMENT, MIXING SURFACE IMPOUND-MENT AND CONTAINER STORAGE AREA

AT THE

P.H.ROBINSON GENERATING STATION

**FOR** 

HOUSTON LIGHTING & POWER COMPANY HOUSTON, TEXAS

FEBRUARY 1987 344-01



#### 4.0 CERTIFICATION

I am a registered professional engineer in good standing under the Texas Engineering Practice Act, Article 3271a, Vernon's Annotated Texas Civil Statutes. I certify that the verification of closure activities as described in this report represents an accurate summary of activities performed and that the facility has been closed in accordance with the specifications contained in the approved Closure Plans.

Bruce M. Daniel, P.E.

Avere M. Vame

Serial #48121





#### February 9, 1987

Houston Lighting & Power Company P.O. Box 1700 Houston, Texas 77001

Attention:

R. Don Grover, Ph.D.

Supervisor, Environmental Protection Department

Subject:

Liner Certification

P.H. Robinson Generating Station

- a) Demineralizer Regenerant Surface Impoundment
- b) Demineralizer Regenerant/Non-Oily Drain Mixing Surface Impoundment

Reference:

- a) Texas Water Commission Technical Guide No. 4, Ponds and Lagoons
- b) Daily Field Reports 344-01-3-100 thru 344-01-3-109

#### Gentlemen:

Reference a) recommends that the liner for a Class II pond consist of the following:

3'
21
$\leq 1 \times 10^{-7}$ am/sec
<b>⋝</b> 30
>30
∑15



Houston Lighting & Power Company February 9, 1987 Page 2

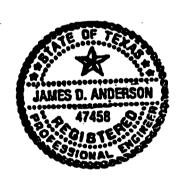
Based upon the results of laboratory tests and field tests and observations reported in reference b, I certify that the compacted clay liners for the demineralizer regenerant surface impoundment and the demineralizer regenerant/non-oily drain mixing surface impoundment meet the minimum criteria for Class II pond soil liners.

Respectfully submitted,

RESOURCE ENGINEERING, INC.

James D. Anderson, P.E. Senior Geotechnical Engineer

JDA/bw:344-01



The Light company

....

**COMPANY** Houston Lighting & Power P.O. Box 1700 Houston,

DCC. R. D. SHOKNOUS

L. B. Horrigan, Jr.

D. R. Betterton

D. G. Tees

J. D. Parsons

J. M .Newton

G. B. Painter

C. E. Miller

\*R. B. McDonald (\*w/attachment -

RCRA File #14)

November 27, 1985

Mr. Minor Hibbs Hazardous & Solid Waste Div. Texas Water Commission Post Office Box 13087 Capitol Station Austin, Texas 78711

SUBJECT: CERTIFICATION OF CLOSURE (31 TAC, SECTION 335.216)
P. H. Robinson Generating Station - TWC No. 31638

Dear Mr. Hibbs:

Certification is hereby made that the inorganic metal cleaning surface impoundment (listed as facility number 02 on the Notice of Registration) has been closed in accordance with the closure plan submitted on February 11, 1985, supplemented by letters dated May 6, 1985, and July 9, 1985, and approved by the TWC on August 6, 1985. Enclosed is a certification of closure for this impoundment by an independent registered professional engineer.

The demineralizer regenerant surface impoundment and the demineralizer regenerant/nonoily floor drain mixing surface impoundment at this facility will be closed following construction of a concrete tank. Closure of the hazardous waste container storage area will be concurrent with closure of the demineralizer regenerant surface impoundment.

Please contact/Dr. R. D. Groover (713/922-2195) if you have any questions regarding this matter.

Sincerely,

W. A. McGuire

Manager, Environmental Protection

Department

RTB/rmr Enclosure

cc: Texas Water Commission, District 7 (Deer Park, Texas)

#### CERTIFICATION OF CLOSURE

OF THE

### INORGANIC METAL CLEANING SURFACE IMPOUNDMENT

AT THE

P.H. ROBINSON GENERATING STATION

**FOR** 

HOUSTON LIGHTING & POWER COMPANY HOUSTON, TEXAS

**NOVEMBER 1985** 

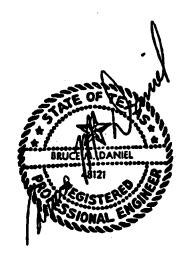


#### 4.0 CERTIFICATION

I am a registered professional engineer in good standing under the Texas Engineering Practice Act, Article 3271a, Vernon's Annotated Texas Civil Statutes. I certify that the verification of closure activities as described in this report represents an accurate summary of activities performed and that the facility has been closed in accordance with the specifications contained in the approved Closure Plan.

Bruce M. Daniel, P.E.

Serial #48121



REF 9

Lol Sin Proc.TO Y89029387

532.67

NUS12951 185

STANDA

\$7855

CORP

1989 V.1

STANDARD AND POORS CURPURATION

STANDARD AND POORS REGISTER OF CORPORA

DALLAS PUBLIC LIBRARY BUSINESS AND TECHNOLOGY

Reference Use Only

### REGISTER of CORPORATIONS, DIRECTORS AND EXECUTIVES

Volume 1

Public Library

MAR 10 1989

Dallas, Texas

Library of Congress Catalog Card Number: 76-642986

ISSN: 0361-3623

STANDARD & POOR'S CORPORATION A McGraw-Hill Financial Services Company



25 Broadway, New York, N.Y. 10004 Telephone—212-208-8702



COPYRIGHT @1989 STANDARD & POOR'S CORPORATION, ALL RIGHTS RESERVED

Acets- Deloitte Haskins & Sells, Houston, Texas Primary Bank— Texas Commerce Bank-Houston, N.A. Primary Law Firm—Bracewell & Patterson Employees: 1,900

\*Also DIRECTORS —Other Directors Are:

\*Also DIRECTO Frank A. Bennack, Jr. Robert J. Danzig Gilbert C. Maurer Peter J. DeMaria BUSINESS: Publishing newspaper S.I.C. 2711

HOUSTON DIE CASTING CO.

(Subs. Chemilite Corp.) 3315 W. 11th Street, Houston, Texas 77008 Tel. 713-869-1434

\*Pres—Harold L. Gluckman Exec V-P (Product & Sales)—Joe Richard \*Secy & Compt—Peggy Papageorgiou Purch Agt—Keith Humber. Accts— P. Levin & Co., Houston, Texas Primary Bank — Ameriway Bank (Woodway, N.A. Primary Law Firm—Weycer, Kaplan, Pulaski & Zuber Sales: \$3Mil Employees: 45 \*Also DIRECTORS

PRODUCTS: Die castings & machining S.I.C. 3359; 3363; 3364; 3841 HOUSTON ELECTRIC CO.

201 Redmond, Warner Robins, Go. 31093 Tel. 912-922-8813

Tel. 912-922-8813

Pres—Charles G. McDonald

Gen Corn—R. Joneal Lee

Project Mgr—William H. Bernard

Accin—Walker, Meadon & Childs, Warner Robins, Ga.

Primary Bank—First National Bank of Atlanta

alles: \$1.30Mill. Employees: 23

HISTINFES. Elements Selec: \$1.30Mil Empi BUSINESS: Electrical

HOUSTON ELECTRONICS CORP.

(Biv. Dak Industries Inc.) 501 Pine St. Ext., Kane, Pa. 16735 Tet. 814-837-9550

John M. Launtz Purch Agt—R. Iwansky Sales Range: \$2—5Mil Employees: 150 PRODUCTS: Quartz crystal bases, glass to metal scale S.L.C. 3679 HOUSTON ENGINEERS, INC.

(Subs. Wilson Industries, Inc.)
P. O. Box 567, Houston, Texas 77001

P. O. Bert 567, Houston, Ten.
Tel. 713-227-3050

Pres-Dwight E. Busch, Lr.
Scholler, Derrel D. Webbart
Scholler, D. Hunter
Cont.—Collin Kinder

S.LC. 3533

Actis - Arthur Andersen & Co., Houston, Texas Primary Bank - Texas Commerce Bank-Houston, N.A. Sales: \$12Mil Employees: 140 \*Also DIRECTORS - Other Directors Are: Edwin A. Anderson James K. Andrews

W. J. Miller
Wallace S. Wilson
PRODUCTS: Oil well tools Preston Moore

H.W. HOUSTON CONSTRUCTION CO. 210 S. Victoria, Puebla, Cola. 81003 Tel. 719-544-2791

-Albert Concialdi Pres & Trees. V-P & Secy—Kenneth W. West V-P—Robert Concialdi V-P-Robert Concialdi
Gen Coun-Mickey W. Smith
Acets-C.L. Brown & Associates, Pueblo, Colo.
Primary Bank-Minnequa Bank of Pueblo
Primary Lew Pirm-Smith & Billupa
Seles: \$15Mit Employees: 100
BUSINESS: General contractor

HOUSTON INDUSTRIES INCORPORATED P.O. Box 4567, Houston, Texas 77210 Tel. 713-629-3000



\*Pres & Chief Exec Officer—D. D. Jordan

\*Exec V-P & Chief Pin Officer—H. R. Dean

V-P & Treas—W. A. Cropper

V-P (Cor Devel)—R. B. Dyer

V-P, (Con Cous & Secy—H. R. Kefly

V-P & Compt—D. M. McClanshan

\*V-P—D. D. Sykors

Acti—Deloitte Haskins & Sells, Houston, Texas

Primary Bank—Chemical Bank, N.A.

Primary Law Firm—Baker & Botts

Revenue: 33.63Bil Employees: 11.306

Stock Exchange(s): NYS-BST, PAC, MID, CIN, PSE

\*Also DIRECTORS—Other Directors Ares

Charles E. Bishop

Floyd L. Culler, Jr.

Howard W. Horne

James R. Lesch

Jon S. Lindsay Randall Meyer Thomas B. McDade lack T. Trotter Jack T. Trotter
BUSINESS: Holding co.: generation, transmission, distr. & sale of electric energy, oil & gas; coal supply serv.. cable TV; development & marketing of lighting, purchase of accounts receivable of subsidiary & venture capital S.I.C. 6719; 1221; 1311; 4911; 5063; 6799

HOUSTON INSTRUMENT

(Div. Ametek inc.) 8500 Cameron Rd., Austin, Texas 78753 Tel. 512-835-0900 Doyle K. Cavin

Pres—Doyle K. Cavin
V-P (Mktg)—John J. Cart, Jr.
V-P (Mtg)—Vern Glover
V-P (Engr)—Eric Silverberg
V-P (Admin)—Robert Zurack
Compt—Ted Middelberg
Acets—Arthur Young, Philadelphia, Pa.
Primary Bank—Chase Manhattan Bank, N.A.
Primary Law Firm—Stroock & Stroock & Lauan Employees: 400
PRODUCTS: Computer graphic peripheral devices: otters, digitizers. 3575; 3577 HOUSTON LIGHTING & POWER

COMPANY COMPANY (1) COMPANY (1 Tel. 713-228-9211



\*Chrm & Chief Exec Officer—D. D. Jordon

\*Pres & Chief Oper Officer—D. D. Sykora

\*Pres & Chief Oper Officer—D. D. Sykora

Group V-P (Nuclear)—J. H. Goldbarg,
Group V-P (Ruchers)—J. H. Goldbarg,
Group V-P (Ruchers)—D. E. Simmons

Group V-P (Rower Oper)—D. E. Simmons

Group V-P (Admin & Support)—E. A. Turner,
Group V-P (Admin & Support)—E. A. Turner,
V-P (Basery Prod)—D. G. Tees

V-P (Bussen & Lif Resources)—R. E. Donn

V-P (Sys Oper)—J. D. Greenwade

V-P (Sys Oper)—J. D. Greenwade

V-P (Sys Oper)—J. D. Greenwade

V-P (Castl Pit Engr & Consty)—L. B. Horrigan, M. V-P (Castl Pit Engr & Consty)—L. B. Horrigan, M. V-P (Castl Pit Engr & Consty)—L. B. Horrigan, M. V-P (Castl Pit Resources)—L. G. Bracken

V-P (Nuclear Oper)—Gerald E. Vaughn

Trons—K. W. Nabora

V-P (Nuclear Oper)—Gerald E. Vaughn

Trons—K. W. Nabora

Parch Agt—B. Commander, Jr.
Acets—Deloine: Haskins & Seils, Houston, Teas

Primary Law Firm—Baker & Botts

Revenue: Sibil Employees: 10,400

\*Also DIRECTORS—Other Directors Arec

Charles E. Bishop

Hollis R. Deen

Howard W. Horne

Thomas B. McDade

Jack T. Trouter.

PRODUCTS: Generation, transmission, distr. & sale of Jack T. Trotter
PRODUCTS: Generation, transmission, distr. & sale of 12 212 21 m etric energy S.LC. 4911 HOUSTON METALS CORP.

Anoth: \$1.96MI - Another Live Feed Stock Exchange(a): VAN - Also - DIRECTORS - Other Directors Arenoville. H. Farris - John Petancic - 1960

H. Farris John Petancie
George Stewart 200 30 (1997) (1997)
PRODUCTS: Oil & gas explore: (1997) and State 12 center

HOUSTON OIL & ENERGY INC. 422 Pétroleum Bidg., Abilene, Texas 79603

—C. Houston Pres—C. Houston
BUSINESS: Oil & gas explor

B.I.C. 1311

HOUSTON, OIL & MINERALS

CORPORATION

(Subs. Seeguli Energy Corp.)

1100 Louisiene 14, Houston, Teams 77002

(Chrm & Pres.—Philip Oxley

\*Chrm & Pres.—Philip Oxley

\*Chrm & Pres.—Philip Oxley

\*Str. V-P.—Stephies 32 Cheshre

\*Str. V-P.—G. Burgher, Jr. Cheshre

\*V-P.—G. Burgher, Jr. Cheshre

V-P.—Ohn L. Elliott

V-P. & Asst Secy.—C. B. Masters

V-P.—Vernon M. Turner V-P—B. J. Munn
V-P—Vernon M. Turner

Gerald L. Georgo
Secy—Karl A. Stew
Cont—T. S. Corbett

SUBSIDIARE HOUSTON OIL INTERNA

Chrm & Pres Philip Onley
HOUSTON OIL & MINES COMPANY (SE S. D. Ches HOUSTON OIL & MINERAL

Chris-Joe B. Foster
Pres & Chief Exec Official by HOUSTON OIL A MINES

& Pres-S. D. Ch HOUSTON PRODUCTION Chrm & Pres-S. D. C

HOUSTON ROLL Chris & Pres-6, D. Ch Accts- Arthur Andense Primery Bank- Control Trust Co. of Chicago

Primary Bash—Contract Trust Co. of Chicago
Total Income, \$1947/168

"Also Interest Trust

"Also Interest Trust

I. D. Gooch "O. of Primary
BUSINESS: Oil and the State of Primary
HOUSTON Of State of Primary
1301 Franch Frig. Chyl.
Primary Bash—Frig. Chyl.
Primary Bash—Frig. Chyl.
Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late Primary
Salon: 26,40460 "State of Primary Late of Primary
Salon: 26,40460 "State of Primary
Salon

Sr V-P (Adm)—Group in Actio—Peat, Micros and Actio—Peat, Micros in 
Care Charles Conductor Pres a Charles V-P & Trees—D. H. Gelilde V-P & Cont—D. G. Weifts Secy—Pegg. & Mehitmes Accts—Deletto Hashing A.

BUSINESS Natural per comments of the comments Mgs. Editors Braham Braham Cr Dir-George Religions Adv Dir-Jerry Buttor Accta- Cojichi Andrew Prinnery Buttor Braham Law Francy Law Fine 1200 Employees: 1,200 Alas Dil BUSINESS: Newspaper

HOUSTON TERMINATION COLD STORY

Pres & Tress ... Tell 712 M.
V.P. Arthur Schwertsung ...
Secretiving L. Senson strainer, Randol 2000 M.
Printery Long Tespesial Management of the Senson strainer, Long Tespesial Management ...
Grossberg ... 1304 M.
Gross

Grossberg 32Mil BUSINESS: Public State S

Market S., Land Market S., Lan

# Properties Incustici VOETOS

Sixth Edition

IIII N. Irving Sax MIIII

XICITY DATA: si-hmn TCLo: 3 ppm: IRR ihl-rat LC50: 2858 ppm/1H ihl-mus LC50: 814 ppm/1H CODEN: DTLVS\* 3,128,71 NTIS\*\* PB214-270

NTIS\*\* PB214-270

TLV: Air: 3 ppm DTLVS\* 4,221,80. OSHA Standard: Air: TWA 3 ppm (SCP-L) FEREAC 39,23540,74. DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. "NIOSH Manual of Analytical Methods" VOL 3 S175. Reported in EPA TSCA Inventory, 1980. THR: HIGH irr and via oral and inhal routes.

3

Disaster Hazard: Dangerous; see bromides; will react with water or steam to produce tox and corrosive fumes. Reacts violently with F<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, NH<sub>3</sub>, O<sub>3</sub>.

#### **YDROCARBON GAS (NONLIQUEFIED)**

NIOSH #: MW 3860000

ntains hydrogen, methane, carbon monoxide, lel = %, uel = 31%, autoign. temp.: 1200°F.

N: COAL GAS

#### **XICITY DATA:**

T: Flammable Gas, Label: Flammable Gas FEREAC 1,57018,76.

?: HIGH. See carbon monoxide.

Hazard: Very dangerous; see hydrogen. 'osion Hazard: Mod, when exposed to heat or flame. ster Hazard: Dangerous; see hydrogen and methane. ight Fire: Stop flow of gas; CO<sub>2</sub>, dry chemical or ter spray.

#### ROCELLULOSE

₹N: 9034348

VEO

NIOSH #: MW 3864000

rated cellulose.

SITY DATA: FDLo:2 film disc/rat

CODEN:

**AENBAX 7,353,52** 

An exper NEO.

Hazard: When heated to decomp it emits acride and fumes.

#### **)CHLORBENZETHYLAMINE**

3

: 17692341

NIOSH #: JH 2625000

31CIN<sub>2</sub>O<sub>3</sub>; mw: 419.01

OROPHENYLPHENYL-"IPERAZINYL)- VESPARAX-WIRKSTOFF

OCTANOL
Y DATA:

3-2 CODEN:

::920 mg/kg ):58 mg/kg 0:540 mg/kg 0:70 mg/kg 27ZQAG -,236,72 27ZQAG -,236,72 27ZQAG -,236,72

27ZQAG -,236,72

iH ivn; MOD orl.

zard: When heated to decomp it emits very s of Cl<sup>-</sup> and NO<sub>z</sub>.

#### HYDROCHLORIC ACID

CAS RN: 7647010 mf: HCl: mw: 36.46 NIOSH #: MW 4025000

Colorless gas or colorless furning liquid, strongly corro-

#### SYNS:

ACIDE CHLORHYDRIQUE
(FRENCH)
ACIDO CLORIDRICO (ITALIAN)
CHLORWATERSTOF (DUTCH)
CHLOROHYDRIC ACID
CHLOROWODOR (POLISH)

CHLORWASSERSTOFF (GERMAN)
HYDROCHLORIC ACID (DOT)
HYDROCHLORIDE
MURIATIC ACID (DOT)
SPIRITS OF SALT (DOT)

TOXICITY DATA:
cyt-grh-par 20 uL
sln-dmg-ihl 100 ppm/24H
sln-dmg orl 100 ppm
ihl-hmn LCLo:1300 ppm/30M
unk-man LDLo:81 mg/kg
ihl-rat LC50:3124 ppm/1H
ihl-mus LC50:2142 ppm/30M
ipr-mus LD50:40 mg/kg
orl-rbt LD50:900 mg/kg

CODEN: NULSAK 9,119,66 THAGA6 39,330,69 THAGA6 39,330,69 29ZWAE -,207,68 85DCAI 2,73,70 AMRL\*\* TR-74-78,74 AIHAAP 35,623,74 COREAF 256,1043,63 BIZEA2 134,437,23

TLV: Air: 5 ppm DTLVS\* 4,222,80. Toxicology Review: ARTODN 39,299,78; AOHYA3 17,159,74. OSHA Standard: Air: CL 5 ppm (SCP-R) FEREAC 39, 23540,74. DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.

sive. mp: -114.3°, bp: -84.8°, d: 1.639 g/liter (gas) @

0°, 1.194 @ -26° (liquid), vap. press: 4.0 atm @ 17.8°.

THR: MUT data, MOD irritating to skn, eyes and mucous mem and via oral and inhal routes. Hydrochloric acid is an irr to the mu mem of the eyes and respiratory tract, and a conc of 35 ppm causes irr of the throat after short exposure. Conc of 50-100 ppm are tolerable for 1 hr. More severe exposures result in pulmonary edema, and often laryngeal spasm. Conc of 1,000-2,000 ppm are dangerous, even for brief exposures. Mists of hydrochloric acid are considered less harmful than the anhydrous hydrogen chloride, since the droplets have no dehydrating action. In general, hydrochloric acid causes little trouble in industry, other than from accidental splashes and burns. It is used as a general purpose food additive. It is a common air contaminant. Violent reactions with acetic anhydride, 2-amino ethanol, NH4OH, Ca<sub>3</sub>P<sub>2</sub>, chlorosulfonic acid, ethylene diamine, ethylene imine, oleum, HClO4, \(\beta\)-propiolactone, propylene oxide, (AgClO<sub>4</sub> + CCl<sub>4</sub>), NaOH, H<sub>2</sub>SO<sub>4</sub>, U<sub>3</sub>P<sub>4</sub>, vinyl acetate. Also CaC<sub>2</sub>, CsC<sub>2</sub>H, Cs<sub>2</sub>C<sub>2</sub>, Li<sub>6</sub>Si, Mg<sub>3</sub>B<sub>2</sub>, HgSO<sub>4</sub>, RbC<sub>2</sub>H, Rb<sub>2</sub>C<sub>2</sub>, Na.

Disaster Hazard: Dangerous; see chlorides; will react with water or steam to produce tox and corrosive fumes.

#### HYDROCHLORIC ACID (MIXTURE)

NIOSH #: MW 4030000

TOXICITY DATA:

CODEN:

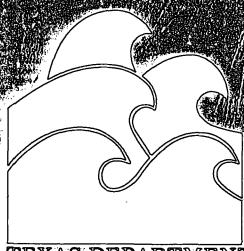
DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76.

THR: No data. HIGH orl, ihl. Corrosive and irr to skn, eyes and mu mem. See also hydrochloric acid.

	(Record Of Item Checked	Above)
TO: Dorinda Sullivan National Heritage Foundation	FROM: Alex Zocchi FIT Chemical Engineer ICF Technology	DATE: 4-5-89
(512) 389-4533	(214) 744-1641	TIME: 10:30 a.m.
SUBJECT: Endangered species i	n the Bacliff, TX area	
species that live along the turtles, the Lagerhead and	e are several endangered or coast of Texas. She said t the Leatherback, could be fo Prairie Chicken could be fo	hat two sea und near Bacliff.
·		
CONCLUSIONS, ACTION TAKEN OR	REQUIRED:	·
INFORMATION COPIES TO:		
EPA Form 1300-6 (7-72)		

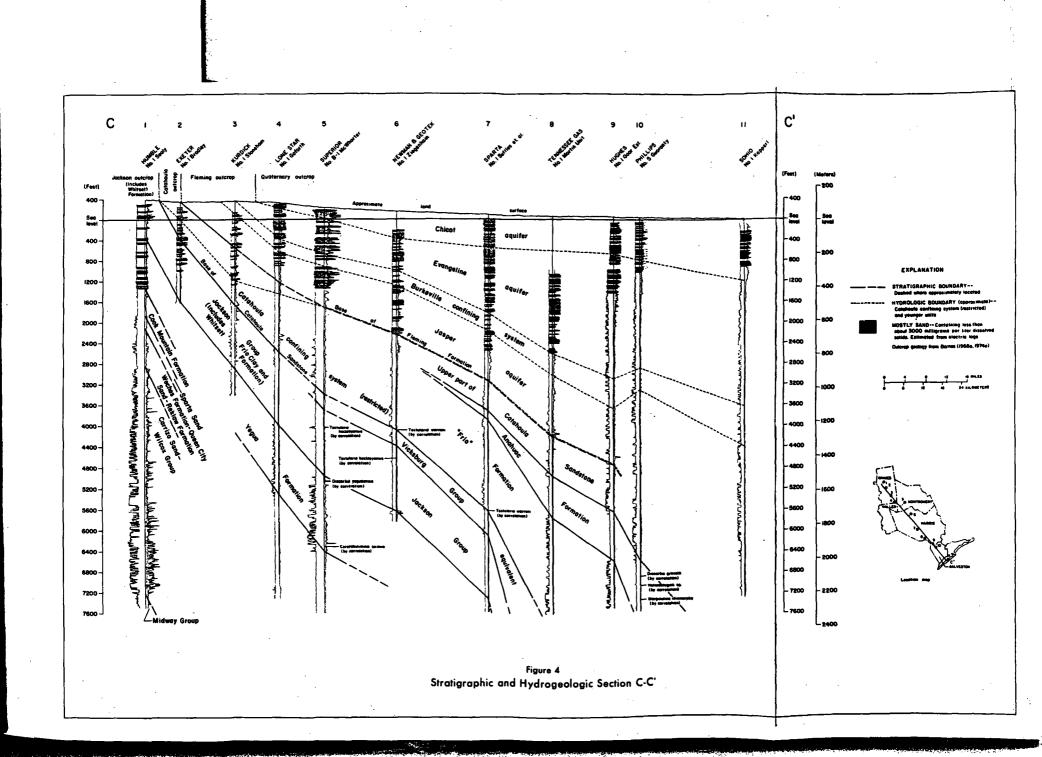
Report 236

### STRATIGRAPHIC AND HYDROGEOLOGIC FRAMEWORK OF PART OF THE COASTAU PLAIN OF TEXAS

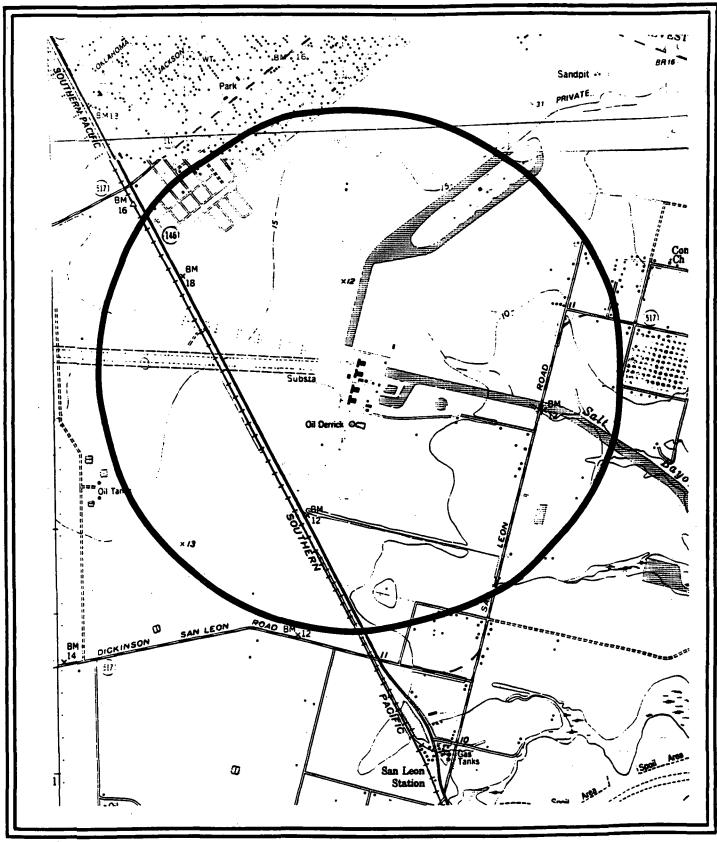


TEXAS DEPARTMENT OF WATER RESOURCES

July 1979









Site Location Map ROBINSON STATION BACLIFF TDD NO. F-6-8902-26 CERCLIS NO. TXD000837401 FIGURE 1



**TEXAS CITY**